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The Role of Females in Feminist Primatology

by

Kimberly-Ann Lambert, B.A.

A thesis submitted to the faculty of Graduate Studies
and Research in partial fulfilment of the requirements
for the degree of

Master of Arts

Department of Sociology and Anthropology

Carleton University
Ottawa, Ontario
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The Role of Females in Feminist Anthropology

submitted by Kimberly-Ann Lambert

in partial fulfilment of the requirements for
the degree of Master of Arts

Thesis Supervisor

Chair, Department of Sociology and Anthropology

Carleton University

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Abstract

The overall purpose of this thesis is to consider the current state of knowledge concerning female primates and the contributions to this topic made by female primate researchers. I will argue that earlier and more androcentric approaches to primates studies are and should be replaced with a more innovative and productive feminist perspective.

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Introduction

I. The argument for primate studies

Why should anyone study primates? The validity of primate research has long been debated especially between evolutionists and non-evolutionists. One argument advanced by evolutionists is that studies of nonhuman primates will help us better to understand human¹ evolution and behavior.

As behavior cannot be preserved in fossil records, researchers have sought a different approach to understanding early human behavior. Humans and other primates share a long evolutionary history. Thus, humans and primates, especially great apes, are genetically closely linked. In fact, human and chimpanzee genes are biochemically almost indistinguishable. Recent DNA findings show that chimpanzees and humans only diverged about 5 million years ago (Sarich and Wilson 1967, Sibley and Ahlquist 1984, Ueda, Matsuda, and Honjo 1988, Caccone and Powell 1989 in Zihlman 1993:34). This has led scientists to suspect that only a relatively small number of genes, controlling the timing of development, are responsible for the differences in speech and "culture" between humans and other primates (King and Wilson 1975).² As Sarah Blaffer Hrdy (1981:7) states, our

"... awareness of the differences, when combined with knowledge of our close relation by common descent with the other apes [or primates as a whole], ought ... to make us wonder out loud how we could have come to be the way we are".

Primates, as a whole, have a greater capacity for learned behavior than any other living

¹ I will discuss my spelling of the terms woman, woman and human in the final section of this introduction.

² I acknowledge that recent discoveries have told us that *Pan paniscus* or bonobos are our closest living relative

species. However, it is understandable that some research focuses only on humyn attributes, such as our ability for culture. Various definitions of culture have been given, but most view culture as the creation and transmission through learning of value systems, traditions, customs, thought, speech, actions, spirituality, material traits, advanced technologies, and the capability to formulate and articulate conscious decisions, all of which govern the beliefs and behavior of the individuals exposed to them (Webster 1981; Hrdy 1981:7). While nonhumyn primates lack the same degree of culture as humyns, I would argue that nonhumyn primates also show signs of culture.³

In summary then, I agree with Jane Lancaster (1973:32) who says that primate research can help us answer biologically and culturally based questions by revealing patterns that form similarities and continuities with humyn behavior as well as sharp contrasts that highlight specializations peculiar to the emergence of the humyn species. As Sarah Blaffer Hrdy (1981:1) puts it in The Woman that Never Evolved,

by inference one can learn.

II. The argument for a feminist primatology

If primatology is the study of primates, then *feminist primatology* is the study of primates from a feminist, as opposed to a “traditional” or androcentric,⁴ perspective. Feminist primatology is generally, although not exclusively, focused on the role, and the importance or

³ Some who deny that nonhumyn primates show any signs of culture are K.R.L. Hall (1968) and Reed (1978).

⁴ Most non-feminist descriptions of behavior derive from the perspective of and focus on males. This “traditional” or androcentric approach, in most cases, is applied to all members of the group under study; see Chapter 2.

value attributed to this role, of the female primate. Feminist primatology does not exclude male members of the primate order, however females are the focal point of research. Although there are exceptions, most feminist primate researchers have been female and, for the purpose of this thesis, female primatologists will be given the spotlight (Jacobson 1989:4).

The overall purpose of this thesis is to consider the current state of knowledge concerning female primates and the contributions to this topic made by female primate researchers. I will argue that earlier and more androcentric approaches to primate studies are and should be replaced with a more innovative and productive feminist perspective. Indeed, the significance of my title “The Role of Females in Feminist Primatology” is threefold. First, it indicates my interest in the contribution of wimmin scholars to primate studies. Second, it indicates my view that the study of female nonhumyn primates by these female scholars has transformed the field of primatology. Thirdly, it indicates my view that a “feminist” perspective is now emerging in primatology.

In Chapter one, I will provide a summary of perspectives and methods in primate studies that are now being challenged by more female centered research. Chapter two will state the case for this more female focused approach to primate studies which I call “feminist primatology”. The third chapter will discuss the contributions of several female academics to primatology. The last chapter will indicate how “feminist primatology” has transformed views of female primates, specifically regarding our understanding of female nonhumyn primate mother-offspring relationships, matrifocal units, female of family coalitions, divisions of labour, sexual dimorphism and dominance. Finally, my conclusions will identify gaps in my research and in feminist primatology and indicate directions for future research.

III On the spelling of womyn, wimmin and humyn

I agree with those who argue that language, which is itself a cultural construction, culturally defines, limits and categorizes ideas and thoughts.⁵ As one of the arguments of this thesis is that females are not extensions of males, I believe that the terms “woman”, “women” and “human” are generally meaningful in relation to the terms “man” and “men”. I thus choose to use the terms “womyn”, “wimmin” and “humyn”. As Francine Wattman Frank and Paula A. Treichler put it in Language, Gender, and Professional Writing: Theoretical Approaches and Guidelines for Nonsexist Usage,

“... feminist scholarship is more than a matter of content and argument: changes in perspective and worldview bring changes in language. Resistance to nonsexist language is sometimes a resistance to the new worldview it represents”.

Appendix 1 provides examples of others who follow this convention.

⁵ See Blundell (1989) regarding discourse theory.

Chapter One - Problematic Perspectives in Primatology

As in other fields of research, early perspectives in primatology were plagued with androcentric viewpoints about gender differences. In studies of nonhuman primate societies, males were described as socially central, powerful and competitive. Primate social organization was commonly believed to be founded upon a stable, dyadic, and linear male dominance hierarchy. Females were observed to be passive dedicated mothers who were sexually receptive to males and played little part in the social organization of primate societies (Fedigan 1989:41).

First, this chapter will summarize some androcentric aspects of three influential perspectives on primate gender differences which have been challenged by more female-centered studies. Secondly, it will indicate some of the methodological problems within primatological research. This overview will provide the context for more female-focused studies to be discussed in the following chapters.

I Theoretical perspectives in primatology: androcentrism

Some aspects of accepted theoretical perspectives have helped to perpetuate androcentric agendas. The following is a brief look at some of the ways in which darwinism, functionalism, and sociobiology have been used to support androcentric primatological research and data.

i Darwinist views

Scientific theories about gender differences can be traced to evolutionary theories. According to evolutionary theories, the dominance of males over females is based on two

biological traits: the proportionately larger size of males (sexual dimorphism) and the reproduction investment of females.

In The Descent of Man, first published in 1871, Darwin's evolutionary theory explained many aspects of sex differences and sexual dimorphism by suggesting that competition exists between members of the same sex for mating access to the greatest number of desired members of the opposite sex. He named this "the process of sexual selection". This implies that when one sex (females) invests more time in offspring rearing, this sex (female) becomes a limited resource for which the opposite sex (males) competes. For instance, as adult females invest most of their time being pregnant, lactating or rearing offspring, access to them is limited and perceived as a successful pursuit.

Traits may be favored because they provide those of the same sex with advantageous characteristics for competition (Darwin 1871 in Silk 1993:216-17). Competition among males may thus lead to sexual differences and dimorphism. For instance, a larger male will most often dominate a smaller male. (Lancaster 1984:1-2). Male dominance is viewed as functioning to organize and control a group. This theory assumes that social inequalities between the sexes (and classes and races) represent the forces of natural selection and should not be tampered with, as tampering would impede progress (Hrdy 1981:13). Thus social inequality is justified. With respect to intellectual capabilities Darwin (1871 2:327-328) resolved that "the average standard of mental power in man must be above that of women", and thus "man has ultimately become superior to woman".

Darwin's idea of sexual selection emanated from his effort to explain sexual dimorphism. As DeVore and Washburn (1963 in Bramblett 1976:253) were influenced by

darwinists theories, they argue that baboon anatomy, i.e. sexual dimorphism, reflects the optimum distribution of the species' biomass. If natural selection favors large males, then it will also favor smaller females. Smaller females allow for more females and maximizes reproductive potential.

As primate research became more popular toward the end of the 1960s, a first round of primate research was published. It was very apparent that a theme of dominance, derived from Darwin's early views, resurfaced. Many of the primate studies conducted identified a more or less linear dominance hierarchy consisting of males at the top and females in lower ranking positions (Lancaster 1973:32). Even today some female primatologists agree with this notion. According to Silk (1993:216), "asymmetric dominance relationships arise when differences in the body weight and canine size of adult males and females occur". Although sexual dimorphism has developed in some mammalian species because of distinct dietary specialization, Silk (1993:216) argues that sexual dimorphism among primates has likely evolved through the process of sexual selection.

Comparative analyses of the relationship of social organization and sexual dimorphism suggest that we can make tentative inferences about social behavior and male-female relationships among early hominids if we can assess the amount of sexual dimorphism among them (Silk 1993:222).

ii Functionalist views

In Men in Groups (1969), and later in The Imperial Animal (1971) with Robin Fox, Lionel Tiger argued that there is a fundamental sexual difference in the social biology of all primates and that this difference relates to a fundamental division of labour where males assume the traditional roles of protector, sexual predator and social director and where females are

naturally content to assume the nurturing maternal role. Functionalists explain “the structural pattern of social institutions in terms of how they function as integrated systems to fulfill individual and societal human needs” (Sperling 1991:206). Roles are said to be so entrenched in behavior that specialization has developed in their psychobiology (Lancaster 1973:32).

According to Robert L. Trivers (1972 in Silk 1993:217) in “Parental Investment and Sexual Selection”, within the anthropoid ape species, exaggerated characteristics are most often seen in males. He also argues that this phenomenon arose because females are predisposed to make a greater investment in production and offspring rearing. Males, on the other hand, have little to do with offspring rearing and their efforts are directed toward obtaining sexually receptive females. Thus, he concludes that competition for these receptive females may have influenced sexual dimorphism. Clutton-Brock and Harvey (1977;1984 in Silk 1993:218) also contend that there is a positive correlation between the degree of sexual dimorphism between females and males and the intensity of competition between males.

Russell and Russell (1972 in Bramblett 1976:254) propose that a larger male is naturally favored particularly when the male is specialized for leading and defending his troop. Thus, sexual dimorphism is perceived as an adaptation to the hazards of life in a relatively terrestrial habitat. Arboreal primates show less sexual dimorphism because they can theoretically avoid predation by agile brachiation and cooperative taunting. As Irven DeVore (1963b:313) remarked “life on the ground exposes a species to far more predators than does life in the trees [...]The ultimate safety of nonhuman primates is in trees, and even the ground-living baboons and macaques will take refuge in trees or on cliffs at the approach of a predator”.

iii Sociobiological views

According to sociobiologists, sexual selection favors and transmits traits which increase the attractiveness of an individual to the opposite sex thus maximizing the reproductive fitness of individuals (Sperling 1991:206).

Zuckerman (1932 in DeVore 1963b:313) argues that aggressiveness and fighting skills correlate with the acquisition of “harems” which males must acquire and defend. Thus sociobiologists would argue that aggression and fighting skills in males are attractive to females. DeVore acknowledges that observations of confined animals can be misleading and that sexual jealousy has not been frequently observed in free-ranging troops (Bolwig 1959, Hall 1960, 1961, Washburn and DeVore 1961a, 1961b in DeVore 1963b:313) but goes on to state that “because only the adult males are morphologically adapted for defense, a baboon troop has twice the reproductive capacity it would have, for the same number of individuals, if males and females were equally large”.

Clutton-Brock and Harvey (1977:1984 in Silk 1993:218) argue that sexual dimorphism is consistently associated with a sex ratio of the number of females to males. In the case of monogamous gibbons, siamangs, titi-monkeys, marmosets and tamarins who show little signs of sexual dimorphism, the number of adult females to males is more even. On the other hand, polygynous cercopithecines and great apes groups, who show greater signs of sexual dimorphism, require a smaller number of adult males to sustain a group. However, Clutton-Brock and Harvey admit that social structure does not always determine the levels of competitiveness. For example, subsequent research found that “folivores are generally less dimorphic than frugivores, arboreal species are less dimorphic than terrestrial species, and

small-bodied species are less dimorphic than larger-bodied species” (Clutton-Brock and Harvey 1984, Leutenegger and Cheverud 1982, Gaulin and Sailer 1984 in Silk 1993:220).

II Methodological practices in primatology: problems⁶

In this chapter, I have argued that some darwinist, functionalist and sociobiological arguments have focused on males and made assumptions about determinants of primate behaviour and sexual differences. However, there are other important considerations in primate research including how methodologies can influence notions about primate behaviour. I now turn to this issue. The following overview will provide the context for improvements in methodology made by some female scholars which will be discussed in the following chapters.

i Laboratory and unnatural research settings

Research methodologies can influence notions about primate behaviour. For example, some would argue that data concerning captive primates is beneficial and necessary to primate research. Those who hold this position might also argue that both captive and free-ranging primate data are necessary and complement each other. A methodological problem occurs when bias, more specifically the influence of the laboratory or unnatural setting, is not taken into account. Free-ranging primates, in their natural habitat, will certainly exhibit different behavior than captive primates.⁷ For instance, captive primates no longer have to search for food, water, or shelter nor will they experience environmental influences such as predators or climatic

⁶ These issues will be further addressed in the section on Thelma Rowell in Chapter 3.

⁷ Others argue for a more “humane” environment for captive primates than those which currently exist. And others argue that no animal should be observed under captivity because the observations obtained are too biased.

change.⁸ (McKenna 1982:53). According to Morris (1967:2),

[i]f [nonhumyn primates] are maintained in typical laboratory cages it is impossible to study any but their simplest behaviour patterns. If they are set up in a social group, then a large enclosure is required and it immediately becomes difficult to manipulate or control the individual members of the group for experimental purposes.

Humyn contact or crowding will also inevitably alter behavior. According to DeVore (1963b:313), the inter-group fighting of rhesus macaques that Carpenter observed on Cayo Santiago Island was probably aggravated by unsettled conditions on the island. Solly Zuckerman (1975:62-67 in Reed 1978:28) described one consequence of captivity or over crowdedness. In 1925-30, during a London Zoo experiment, a small number of females were introduced to a larger number of males. As no retreat was provided for the females, fights ensued which led to the extermination of all the females and their young. K.R.L. Hall (1968a:155 in Reed 1978:28) described a similar occurrence at the Bloemfontein Zoo where the introduction of an alien pair triggered fighting which led to the injury or death of most of the animals in the group. He concluded that “it is all too well known that in the unnatural restriction of physical and social space of the usual captivity conditions, lethal aggressiveness may occur”.

ii Duration of research

Another early source of bias in primatology was caused by the duration of research projects. When field research first began, researchers spent limited amounts of time in the field. For example, George Schaller’s classic study of mountain gorillas lasted under a year. At that

⁸ Unless introduced by the researcher.

time, it was considered monumental in comparison to other field studies. However, his research included a nine month study, consisting of only 458 actual hours of observation of one single population. It was not evident at that time that a full year's study might not reveal some major aspects of social organization (Lancaster 1973:32).

Primate field investigation can also be very challenging because primates often live in inaccessible regions. For this reason, visual access can be hampered. It is now evident that many hours of observation are needed to view the complex and changing quality of primate behavior (McKenna 1982:54).

iii Conflations and over-generalizations

As monkeys and apes are so closely related to humyns, conflations and over-generalizations become problematic. As available data were limited, it was common for early academics to make generalizations regarding humyns based on primate research. For example, during the mid 1960s, DeVore and Hall (1965:54 in Sperling 1991:209) wrote “[t]he baboon troop is organized around the dominance hierarchy of adult males”. Influenced by DeVore and Hall’s writings, Robin Fox (1968:87 in Sperling 1991:209) wrote in the New York Times about the baboon model: “[i]f this kind of social system was, in fact, typical of man’s ancestors, then it provides some powerful clues concerning the evolution of the brain”.

Ignored however, was the phylogenetic relationship between baboons and humyns. Baboon societies were highly anthropomorphized as they were perceived to be socially organized in a very “humyn” fashion. In turn, baboons were used to describe early humyn attributes. As stated by Sperling (1991:210), “[the] use of the baboon troop as a model for

ancestral human populations was very influential in forming both sexist and anthropomorphic views of monkeys in popular culture". Fedigan (1986 in Sperling 1991:210) points out that the "baboonization" of protohominids became so popular in the 1970s that all introductory text books referred to baboon behavior as a prototype for all other primates.

The "humanizing" of primates can also be deliberate. Primates are sometimes used in medical and psychiatric test situations "with the specific intention of applying the results obtained from the animal to a human context". "...this can hardly be classified as a true study of primates as primates; it is the study of primates as dummy-humans, and anything we learn about them as zoological specimens here is of purely secondary benefit" (Morris 1967:1).

iv Male focused research

Another methodological flaw has been caused by the research focus. Nonhuman primate males are often large and their behavior conspicuous. Therefore they have often received more attention, although they might constitute a small percentage of a group. Hence, Lancaster (1973:32) states "[f]rom this observation bias, it is only a short step to equating the social relations of that small minority with the social organization of the group".

As an example, compared to the Mahale mountains chimpanzees of the south, Gombe Stream chimpanzee females were rarely observed in predatory behavior during the first few years of research. This is partially due to the fact that females were rarely the focus of research (Takahata, Hasegawa, and Nishida 1984 in Zihlman 1993). Goodall (1986 in Zihlman 1993:35-36) attributes this methodological problem to the fact that female chimpanzees are less sociable and shyer and are therefore more difficult to follow than male chimpanzees. Goodall (1986) goes

on to claim that once this bias was rectified, more females were observed engaging in predatory behavior. As Parker and Parker (in Hrdy 1981:6) note “male superiority is simply an impression conveyed by bias in data collection and analysis”.

III Conclusions

Given that the topic of this thesis is primatology, biological analysis is inevitable. Unfortunately, research is capable of extraordinary misconceptions and biology has been seen as working against the female species. One of the reasons that the biology of animals has been ignored, regarding feminist issues, is because some aspects have been used to paint a prejudicial picture (Hrdy 1981:8). Continuous reports of “competitive males and mothering females” are currently “entrenched” in academia and society (Hrdy 1981:3). As this chapter has described, biology has been frequently used to justify submissive and inferior roles in females (Hrdy 1981:1). Nonetheless, as the following chapters will discuss, a more female focused biology can dispel “traditional” notions about primate behaviour.

Chapter two - Feminism and Feminist Researchers

Feminist primatology takes its lead from feminist theories including the view that sex⁹ is relevant to the understanding and perception of humyn behavior. In contemporary western society, the different sexes, and everything that is associated with these sexes, are assigned different values within the dominant ideology. Females are presumed weaker, more fragile, subordinate, less powerful, inferiorly asymmetrical, naturally meant to bare and rear offspring, and to naturally take part in “domestic”¹⁰ realms. By contrast, males are presumed to be larger, stronger, dominant, more powerful, asymmetrically superior, hunters and protectors, and to take part in the “political”¹¹ or “public” realms (Jacobson 1989:5,14).

A feminist perspective questions this ideology. Some, and I would argue most feminists, entertain a “feminist” perspective in order to attain less gender biased knowledge. However, I would argue that those researchers who are searching for relatively “bias free” information are searching for something unattainable. Feminism is not less ideological than traditional or androcentric perspectives. The difference is that feminist theory acknowledges its focus, contrary to “traditional”, or supposedly “generic” theory, which does not acknowledge its androcentrism.

As most theoretical frameworks have been and are androcentric, a feminist perspective questions the origins and patterns of presumed sexual differences and does not take culturally determined characteristics for granted. Feminists come up with new methodologies and theories

⁹ Sex is understood to mean those differences between females and males that are resident in biology and/or physiology (Jacobson 1989:14).

¹⁰ Here, “domestic” refers to tasks surrounding the rearing of offspring

¹¹ Here, “political” refers to social hierarchies where females are assumed not to partake.

which suit their research. It is to be noted, however, that there are different perspectives within feminist research concerning sexual differences. Nonetheless, it is important to note that the perceptions of sexual asymmetry do have origins, and have and will evolve over time (Jacobson 1989:28).

I Positions in feminist theory

The active debate concerning the nature of the forces which have shaped the evolution of humyn behavior is ongoing. Implicit in this debate are the notions of sexual differences and sexual asymmetry.¹²

Some would argue that humyn behavior is simply an efficient form of phenotypically determined actions and that humyns are subjected to the same forces of selection as other primates (Alexander et al. 1979, Lumsden and Wilson 1981 in Silk 1993:). Others would argue that behaviour results from evolutionary forces which might be different from those that natural selection would predict (Boyd and Richerson 1985 in Silk 1993:22; Gonzalez 1984:8; Jacobson 1989:17).¹³ The following considers the discourse surrounding these two perspectives.

i Phenotypically determined behavior

Those who hold this position assume a basic universal sexual asymmetry¹⁴ but question

¹² For the purpose of this thesis, I will use the standard definition or meaning of “asymmetry”, or by opposition “symmetry”. According to The Webster New Collegiate Dictionary (1981:1172) “symmetry” is defined as “balanced proportions”. The J.I. Rodale Synonym Finder (1978:1207) synonymizes “symmetry” as “harmony”, “balance”, “fitness”, “appropriateness”, “evenness”...

¹³ Please note that I acknowledge that not all feminist theory may be exhaustively included withing these two positions.

¹⁴ Supporters of this position are Rosaldo (1974; 1980) and Hrdy (1981)

why and how this asymmetry was developed and is maintained. Supporters of this idea believe that females are universally subordinate. Some base this assumption on biological determinism where “women’s biological capacity to bear children is a social incapacity” (Jacobson 1989:17). Some evolutionists claim that sexual dimorphism is the result of competition among males for access to sexually receptive females. Thus, men would “naturally” be larger, more aggressive and dominant over females (Zihlman 1993:32).

Traditional anthropologists such as Evans-Pritchard (1965) held that sex roles were universally asymmetrical (Gonzalez 1984:8).¹⁵ However, contrary to Evans-Pritchard, some more female-oriented functionalists have *questioned* the origin of this sexual asymmetry. Functionalists, as a whole, dictate that “society is an integrated and relatively stable system composed of interdependent parts or elements” (Saunders 1988:156) and therefore, sexual asymmetry facilitates the integrated or equilibrated functioning and maintenance of society. Sexual patterns are explained as the consequences of invariant social needs and as functional necessities. Here, sexual asymmetry is explained as a consequence of two basic survival needs: reproduction and subsistence (Saunders 1988:156-7). Functionalists argue that long periods of immobility, due to offspring rearing, have prevented females from pursuing cultural and technological alternatives and sharing in major subsistence activities with males. Thus, complementary social roles have emerged (Saunders 1988:157). Rosaldo and Lamphere (1974:3) reaffirm this belief:

All contemporary societies are to some extent male-dominated, and although the degree and expression of female subordination vary greatly, sexual asymmetry is

¹⁵ For more information see Evans-Pritchard (1965); Rosaldo and Lamphere (1974); Ortner (1974); Ardener (1975).

presently a fact of human social life.

The difference between “traditional” functionalists and those who hold a more female-oriented position is that the latter question the origins of sexual asymmetry.

ii Culturally determined behavior

This second position suggests that sexual asymmetry may not exist in all humyn cultures. Those who adhere to this position empirically investigate conventional assumptions about female subordination. If subordination does exist, it is not taken for granted or assumed to be universal. Physiological differences and what is assumed to be “natural” are acknowledged as being defined in their cultural context (Jacobson 1989:21).

More recently, Collier and Rosaldo (1981:275) questioned the assumption that reproduction is the cause of asymmetric cultural practices. According to them, bridewealth and brideservice structure wimmin’s relationships within a society. Therefore, within humyn society as a whole, “varying patterns of male-female cooperation, dominance, and independence [are] in fact variable and social” (Collier and Rosaldo 1981:318). Jacobson (1989:21) also agrees that female subordination or inequality should not be assumed to be a product of biological difference.

This second perspective can be largely, but not exhaustively, grouped into those who hold (A) a synchronic perspective or (B) a diachronic perspective (Gonzalez 1984:9). The **synchronic** model challenges the notion of sexual asymmetry by reassessing previous observations about power and authority and the dominate/subordinate models, which it claims,

only exist in *contemporary* western, androcentric and hierarchical models of authority (Leacock 1981; Rogers 1980; Gonzalez 1984:11; Jacobson 1989:27). Supporters of this perspective ascertain that a more emic perspective would transform this dichotomy into a complex process of sexually balanced proportions.¹⁶ Supporters of a synchronic model are concerned with the complexity of events existing in a limited time period and ignore historical antecedents (Webster 1981:1173).

Those who adhere to a **diachronic** perspective generally argue that sexual asymmetry is a *historical* phenomenon.¹⁷ They question the appearance and function of this “inequality” and agree that it did not always exist. They also question the traditional notion of “roles” and the perception that males were the first to form cooperative bonds (Tiger 1970).¹⁸ Leibovitz (1975) argues that since primate data on sexual roles demonstrates variability in terms of sexual asymmetry, then assumptions about humyn behavior must also be species specific.

Some authors attribute the asymmetry of sex roles to colonialism whereby economic institutions disrupted the balance of each role. (Sacks 1975; Gonzalez 1984; Leacock 1981; Leghorn and Parker 1981; Jacobson 1989:27). Here wimmin’s contributions become invisible as economic developments took place and domestic work became invisible under the more visible public sphere (Jacobson 1989:27). Jacobson (1989:27) claims that “foraging societies are not to be understood as incorporating the same kinds of inequalities in the same division of labour as we now see in the contemporary world”.

¹⁶ Supporters of this position or, for more information see Reiter (1975); Rogers (1975); Tiffany (1979).

¹⁷ Supporters of this position or, for more information see Sacks (1975); Leibowitz (1975); Slocum (1975); Leacock (1981); Leghorn and Parker (1981); Lerner (1986); Jacobson (1989).

¹⁸ For further discussion see chapter 4, section on females and family coalitions.

iii Critique

Are sexual differences biologically or culturally constructed, or influenced by both? Are humyn sexual differences an extension of evolutionary behaviors presently existing in apes, the outcome of an ancient hunting way of life, or the outcome of “recent” colonial influences? Does sexual asymmetry even exist? If so, are these differences universal or culturally constructed? If sexual asymmetry exists, are males dominant over females? If so, to what extent is aggression and dominance determined by biological sex? (Zihlman 1993:32) These are some of the questions that feminist scholars are trying to answer.

According to Saunders (1988:156-9 in Jacobson 1989), supporters of phenotypically determined behavior agree that men are universally and naturally dominant, but they fail to acknowledge the underlying Western model which assumes these values and rules. They ignore the role of wimmin in the non-domestic labor force and domestic activities which are perceived to have little economic value. According to Jacobson (1989:17),

[t[his [the phenotypically determined behavior] approach does not rest on gathering empirical data. It relies on an embedded Western understanding of what it is to be female, on an ideological framing, and on the assumption that all women are alike, and so their roles and tasks in society must therefore be identical. The circle is then completed by arguing that because this is so there is no need to study it further.

Instead, they should recognize that work revolving around the rearing of offspring or what is “natural” for a humyn individual is culturally defined and put into context. I agree with MacCormack (1980:17) who eloquently asserts that

both [humyn] men and women procreate, eat, defecate and satisfy other survival needs. To do so is natural, but the etiquette of eating, the time, place and position for the defecation and indeed the rules prescribing time, place and position for

ejaculation or parturition are cultural. ... Might we then conclude that both men and women are nature and culture, and there is no logic compelling us to believe that at an unconscious level women, because of their naturalness, are opposed and subordinate to men?

From an androcentric viewpoint, domesticity, which is considered to be “natural”, is taken for granted and is invisible (Jacobson 1989:12). Where females do take part in non-domestic activities they are dismissed as exceptions or no serious questions are asked (Jacobson 1989:5). When females are discussed, they are presented only in the form in which males make them visible, either by the males within their group or by androcentric researchers. Therefore, females are excluded or made invisible, which implies that they are not a vital part of their group (Jacobson 1989:6). The “invisibility of [females]”¹⁹ is the consequence of the primacy of the public world over private domestic space” (Jacobson 1989:12). Androcentrism draws conclusions without asking questions about evidence and makes assumptions or judgements that “are so much taken for granted that they are invisible, they are outside awareness” (Jacobson 1989:9)

I believe that sexual asymmetry does not exist. Problematic to the discourse surrounding sexual asymmetry is the meaning and context of the terms “asymmetry or symmetry.” Seemingly, the terms “asymmetry” and “differences” have been mistakenly used interchangeably. Once again, I will assume that the standard definition or meaning of “asymmetry”, or by opposition “symmetry”, has been followed. According to The Webster New Collegiate Dictionary (1981:1172) “symmetry” is defined as “balanced proportions”. The J.I. Rodale Synonym Finder (1978:1207) synonymizes “symmetry” as “harmony”, “balance”,

¹⁹ I have interchanged females for wimmin because I am focusing on females as a whole and not (speciescentrically) about humyn females.

“fitness”, “appropriateness”, “evenness”...

According to these definitions, my opinion is that gender roles are *symmetrical but different*, not asymmetrical or “uneven”. Each role has its own “equal” functions. I do not imply however, that each sex has a determined role. I would also argue that the notion of asymmetry lies with the *importance* attributed to the female role and not to the role itself. As Saunders (1988:159) puts it “the issue then for feminism is more than sex differentiation; it is sex inequality”.

Sexual *differences* have developed because of the biological need for differing roles. Biologically speaking, the act of sex, which occurs between two independent members of the same species, has evolved as a response to viruses and genetic defects whereby combining genes impedes the probability of transmitting but increases the probability of fighting viruses and genetic defects. Different sex roles developed because it was very expensive for all specimens to hold all necessary components for producing viable offspring. Each role was defined to work in “harmony”, “balance”, “fitness”, “appropriateness” and “evenness” with the other role.

The original basis for sexual differences in behaviour in most animal organisms probably evolved because of biological differences. I would argue that nonhuman primate sex roles are analogous to humans as they demonstrate variability which is an adaptive response (Saunders 1988:160).

Nonetheless, I believe that those who deny biological differences are denying them for the wrong reasons. Instead we should look at these differences in a different light, in a way that empowers females. I want to note that I do not assume that biological differences are the sole determining factor of sexual differences but are very important in understanding their origin.

On the other hand, I would argue that colonialism is in fact not the reason for sexual asymmetry but a reason that sex “roles” are no longer necessary. That is, I would argue that, yes there have been sexual differences but that with the evolution of primates and culture, the defining limits to these traditional roles have been blurred and that these perceived roles are not needed as they once were. This is evident in the different perception of sexual symmetry cross-culturally or across different species.

II Feminist primatology

Feminist theory is usually concerned with humyn attributes. However, during the women's movement of the 1960s, some wimmin began studying groups of nonhuman primates from a biological, physical, and social anthropological perspective. As a result the following question emerged: "What can monkeys and apes teach us about being female on the planet or about being animals in complex and gendered societies ?"(Ward 1996:86). Silk (1993:220) contends that a comparative approach can be effective for understanding gender hierarchies in two different ways.

First, this body of work can provide well-founded insights about the social organization and behavior of hominid species that preceded the appearance of modern humans. Second, this approach may illuminate our understanding of the relationships between males and females in contemporary societies by identifying both the consistencies and contradictions between our evolutionary history and current cultural realities.

I acknowledge that inferences from primatological findings to humyns have their limitations and that biology, which can itself be ideological, ethnocentric and, androcentric is, in and of itself, not sufficient to explain humyn attributes. Primatology may only provide a limited

basis for understanding the wide range of sexual differences and should not claim to provide a direct explanatory theory to account for these differences since nonhumyn and humyn primates are obviously different.²⁰ Nonetheless, it is my opinion that some nonhumyn primates show signs of culture. Studying female primates can enlighten humyns about the sophistication of the female “role” and perhaps comparatively allow inferences about how this role has changed in the humyn species.

Regarding the concept of the “role” of females in feminist primatology”, “role” is defined as a likeness between some type of social behavior of a set group (Fedigan 1982:110) or a character assigned or assumed (Webster 1981:995). In light of this definition, when we observe social interactions, it becomes apparent that some behaviors are common to an entire group (ie. species) or to certain members of a group (ie. females, males (terms related to sex); infants, juveniles (terms related to age)).

... [A] role is not just behavior, or behavior seen in one category of individuals; it is a repeated, regular, and predictable pattern of behavior, observed in particular situations, in certain subgroups of society which occupy given positions in relation to other subgroups. It is a generalized or abstracted normative pattern of social behavior, which we may call a social part or position in relation to other subgroups (Fedigan 1982:111).

This is independent however of individual behaviors which are labeled “idiosyncratic behaviors” (Fedigan 1982:110). Thus the term “role” can be used as an interpretative and explanatory tool whereby conforming patterns are derived from observed behavior and can help predict social behaviors, interactions and relationships (Fedigan 1982:111). Although role analysis cannot ultimately predict motivations for certain behaviors it may attempt to identify normative

²⁰ I have taken these ideas from Jacobson 1989:32 and applied them to primatology.

behaviors and how they function in an individual's life or within a society as a whole (Hinde 1974 in Fedigan 1982:112).

Returning to the issue of feminist primatology, Jane Lancaster was one of the first female academics to acknowledge the sexual biases within the discipline of primatology. Her article "In Praise of the Achieving Female Monkey" arrived in the public arena during the sexual revolution. In her opening remarks Lancaster boldly states:

"Some ethologists, zoologists and sociologists have looked at other primates and concluded that primate society depends upon the male stability and the female for child care. They have extended their observations from apes and monkeys to human beings, implying that the two sexes limit the possible role of women. But recent primate studies indicate that earlier researchers may have concluded that female primates have a far larger role than that of mother. Now, more than ever, we need to know if apparent differences in behavior between men and women are more or less biologically fixed or heavily influenced by experience" (Lancaster 1973:30).

Nonetheless, there is reservation about what could be called "feminist primatology". As Fedigan duly notes in her article "Gender and the Study of Primates" (1989:53),

[m]any of the significant women in primatology would be reluctant to call themselves (or be labeled!) feminists, so that there may not as yet be a well-developed and self-conscious feminist school of thought within primatology.

However, I would agree with Fedigan that there is a strong and obvious female influence within the discipline of primatology. Both deliberately and because of their life experiences, women contribute a distinct perspective on primate life. Female researchers have provided "revisionist views on their subject matter, views that have helped to replace original reductionists' analyses with more sophisticated understandings of sex roles and social bonds"(Fedigan 1989:50).

There has been and still is an apprehension about a feminist primatology. Academics and

others (policymakers, writers of popular literature), although sympathetic to feminist goals, have rejected primate research. This apprehension is due to the fact that biology has often worked against wimmin. Apprehension is fueled by biological theories explaining male dominance which are usually oriented to enforce predisposed stereotypes (Hrdy 1981:3).²¹ I would argue that feminist primatology takes a new and different perspective to research which sheds light on misleading previous information about the “roles” of females in primate research.

In The Woman that Never Evolved, Sarah Blaffer Hrdy (1988:1) acknowledges that

they [feminist primatologists] will find no basis for thinking that women --or their evolutionary predecessors --have ever been dominant over men in the conventional sense of that word, but they will find substantial grounds for questioning stereotypes which depict women as naturally less assertive, less intelligent or less political than men are.

III Wimmin as primatologists

The main reason that I entered anthropology was due to my great interest in primates. At that time however, I was unaware of the relatively high proportion of female researchers within the discipline, even though the only primatologists I was aware of were Jane Goodall and Dian Fossey. My assumption was that these wimmin had been singled out among a large group of researchers, both males and females, because they had done “good work”. Hence, they had had the privilege of being acknowledged. Even with my everlasting feminist viewpoints, once my interest in primatology developed, I must have become aware of the high proportion of female researchers but never really gave it much thought until I came across Linda Fedigan’s 1994 article “Science and the Successful Female: Why There are so Many Female Primatologists”.

²¹ Androcentric theoretical perspectives have been discussed in Chapter 1.

Since I had never really thought about why I was interested in primatology, other than the fact that I was repeatedly drawn to it for some unexplainable reason, I thought that this article might answer some questions.

Statistically, are there really so many female primatologists? The answer depends on which statistic one considers. When comparing primatology to other animal sciences such as zoology and biology, yes there are proportionally more females. The high proportion of females in primatology is comparable however to the number of female researchers within the parent disciplines of anthropology, psychology and animal behavioral sciences (Fedigan 1994:532). In 1992, The American Society of Primatology registered 670 members of which 51.8% were wimmin. Twenty eight percent of those belonged to the parent discipline of anthropology, 25.5% to psychology, and 19.6% to zoology or biology (French 1992:160161). Fifty six percent responded that their predominant research interest was primate behavior and 25.6 % in biomedical research. Interestingly, the age ratio demonstrates a larger proportion of males who received university degrees in the 50s and 60s but this proportion has quickly changed as wimmin are increasingly receiving Ph.D.s, outnumbering men 3:1.

Fedigan (1994) notes that wimmin are more likely to study primates than any other type of organism in the animal kingdom and that there are proportionately more females studying primates now than a decade ago. She (1994:530) states however that, "I have yet to see a convincing analysis of why women might be particularly attracted to, and successful in, primatology, although I have come to think there are". In her article "Science and the Successful Female: Why There are so Many Female Primatologists" (1994), Fedigan points to several reasons, some of which neither she nor I endorse.

1. **The big brown eye syndrom hypothesis** has been suggested as the most common explanation for wimmim entering the field of primatology. Females are said to enter the discipline of primatology to work with “cute, furry little animals”. Wimmin, who are supposedly naturally disposed to be nurturing and caring, are therefore drawn to these “lovable” creatures out of maternal instinct. In reality, the fact that many primates can be very violent and that field work can be very difficult and dangerous is simply ignored.

2. **The historical location of the discipline.** Primatology is said to be a “new and rapidly growing” discipline (Rossiter 1982), therefore females are said to be attracted to and fare better in this discipline because they can hope to make an obvious impact in research.

3. **Wimmin concentrated within the social sciences.** It has been suggested that female scientists concentrate their research in the social sciences as opposed to the “hard, pure or physical” sciences (Cole 1979; Zuckermann 1991). As Mary Morse (1995:10) points out in Women Changing Science: Voices from a Field in Transition,

perhaps part of the “invisibility” problem is that the activities that women have engaged in throughout history, while scientific in nature, are not formally called “science”.

4. **Primatology’s parent disciplines.** Since primatology is considered to be an intellectual offspring of anthropology, psychology and animal behavioral sciences, it has been suggested that the strong proportion of female in primatology is simply the result of their prior attraction to its parent disciplines.

5. Primatology as a marginal science. It has been argued that females choose to enter “marginal, maverick or nonmainstream” areas of a field of study, although reasons for this are not discussed.

6. Primatologists as good natured academics. The rumored good nature of primatologists has been an attraction for more wimmin to enter the discipline. Researchers (Matyas 1985, Zuckermann and Cole 1975) have identified that camaraderie and responsiveness as essential to the productivity of a science. Such is primatology to the point that Fedigan (1994) and others (Bleier 1984; Morgen 1989; Rowell 1984) have referred to primatology as an “equal opportunity” science.

7. Strong female role models are said to be another reason that so many wimmin enter the discipline of primatology. Such female primatologists are Jane Lancaster, Frances Burton, Jane Goodall, Thelma Rowell and others. The parent discipline of anthropology also has strong female role models such as Margaret Mead and Laura Bohannan.

8. Strong male mentors. It has also been suggested that wimmin may have entered the discipline of primatology due to the encouragement of powerful and good willed men who have deliberately mentored and allowed wimmin into the field of primatology (Rossiter 1982 in Fedigan 1994:536). Probably the best known example is Louis Leakey because of his own popularity, his “sponsorship” of female researchers, and his overt statement that women make better observers of primates. It has also been noted that male mentors offer support that allows

wimmin to enter otherwise male-dominated fields (Fedigan 1994:536). According to Haraway (1989:281), “some women practicing primatology [...] have objected to the image of “daughters”, seeing their contribution unmarked by gender and not derivative from the authorizing masculinist accounts”. She goes on to note, “I do not think that scientific women have been that lucky. The law of the father might be a myth, but its very real potency is hard to deconstruct ”.

9. The National Geographic effect or the media coverage of some female primatologists such as Louis Leakey’s “trimates”, Jane Goodall, Dian Fossey and Birute Galdikas, has been suggested to be another reason that wimmin enter primatology. Although some wimmin have acknowledged, as I have, the impact of the media and National Geographic articles, Haraway (1989) has criticized the magazine for perpetuating female stereotypes and myths about primatological research.

10. Primates as interesting creatures. Wimmin are said to be attracted to the discipline of primatology because of the primates themselves (Fedigan 1994:536). Specifically though, the sociability and the prevalence of matrifocal units within primate societies may attract wimmin to such social “success” stories. Another attractive element is the aspect of comparability between primates and humyns where wimmin can compare behavior in a setting somewhat disconnected from androcentric viewpoints (Aisenberg and Harrington 1988).

Needless to say, each of these points can be argued. I personally want to add an eleventh

reason that some female researchers have entered this discipline, namely that primatology can be a venue for feminist research which has already been noted as a central premise of this thesis.

IV Conclusions

Feminist scholars are responsible for unveiling the contributions of wimmin scientists. As Hilary Rose (1986:57) writes in her article “Beyond Masculinist Realities: A Feminist Epistemology for the Sciences”, “feminism has rendered visible the exclusion of women from science; it has rescued from the oblivion of male history many of the women who have entered science...”. Hence, feminist critics of science are necessarily highly retributive.

For women who have managed to obtain a foothold within the world of science, the situation is particularly fraught. Because they are “inside”, they have everything to lose by a demarcation along the lines of sex that has historically only worked to exclude them. And precisely because they are rarely quite fully inside, more commonly somewhere near the edge, the threat of such exclusion looms particularly ominously. At the same time, as scientists, they have a vested interest in defending a traditional view of science- perhaps, because of the relative insecurity of their status, even more fiercely than their relatively more secure male colleagues (Keller 1989:41).

I would agree with Linda Marie Fedigan (1989) who said that “[m]any of the women primatologists would be reluctant to call themselves (or to be labeled!) feminists. Nevertheless, I would proudly attribute the title of “feminist” to those female primatologists who have significantly contributed to the understanding of sex differences without following accepted androcentric theoretical models. They have created empowerment through meaningful, insightful progressive research. The following chapter will discuss the contributions of some wimmin scholars who have dispelled some of the theoretical and methodological flaws in primatological research.

Chapter three - The Contributions of Wimmin to Primatology

I have argued in chapter one that primatology has been plagued with androcentric perspectives on primate sexual differences. Increasingly, however, female scholars have challenged such perceptions of nonhuman primates. The objective of this chapter is to briefly discuss the evolution of primatology in relation to feminist scholarship and to highlight the contributions which some female scholars have made in behavioral primatology concerning sexual differences and other issues. Although wimmin have contributed to the field of primatology in laboratory or controlled settings, this chapter will focus primarily upon research by western scholars on free-ranging primates. It also summarizes the contributions of notable wimmin scholars who have questioned “traditional” models of primate behavior and have contributed to the advancement of scientific and feminist thought.

I Wimmin in primatology

In The Sexes Throughout Nature, published in 1875, Antoinette Brown Blackwell responded with the first feminist criticism of Darwinist theory.

Mr. Darwin [...] has failed to hold definitely before his mind the principle that the difference of sex, whatever it may consist in, must itself be subject to *natural selection* and to evolution... With great wealth of detail he has illustrated his theory of how the male has probably acquired additional male characters; but he seems never to have thought of looking to see whether or not the females had developed equivalent feminine characters (Blackwell 1875: 16).

In accepting the theory of sexual selection, Blackwell firmly rejected the biological notion of female inferiority (Hrdy 1981:12). She contended that Darwin’s interpretation and observations

were distorted by his androcentric standpoint and that only women can approach the subject from a feminine standpoint (Blackwell 1875:22). Nonetheless, at the time, Darwinism was accepted and Blackwell's views were pushed aside for almost a century. The "dominant" male image was thus propagated and caused a rift between evolutionary biology and what was to emerge as a feminist perspective. As Mary Morse (1995:10) points out in Women Changing Science: Voices from a Field in Transition,

[a]fter several hundred years of dominating science, men have thoroughly defined the culture and rules of the profession [of science]. Science is a specific way of looking at the world and its inhabitants; a systematized method to understand the complexities of nature. Those who call themselves scientists have learned its methodology and agree, generally, to its self-imposed rules.

Thus, until the early 1950s, when primate field studies were first initiated, into the 1960s and 1970s, when long term field studies provided researchers with a clearer look at primate social behavior, it was commonly believed that primate societies were based on a stable male dominance hierarchy and passive females who dedicated their entire existence to reproduction and infant-rearing. Eventually, in the 1960s, a few longitudinal studies provided evidence which suggested that "members of most primate societies are biologically related to each other through the females of the group, whereas the males are only temporary residents" (Fedigan 1989:42). Japanese primatologists also dispelled "traditional" perceptions of primate social behavior by cooperating in teams to produce long term life history studies which reported related and closely bonded females who continued these relationships throughout their lives.²² Males, on the other hand, did not necessarily stay with one group.

²² See Kawai (1958) and Kawamura (1958).

It was not until the mid 1970s that longitudinal western studies of cercopithecine monkeys demonstrated the importance of the mother-offspring relationship. This led to the description of matrilineal systems and the acknowledgment that nonhuman primate social systems were based on female relationships and bonds (Fedigan 1989:42).

At that same time, Thelma Rowell (1967) criticized the male-hierarchy model and used her many years of research on baboons and wild chimpanzees to argue that dominance, as traditionally conceived, was a very limited and learned aspect of primate life. She noted that a dominance hierarchy was far more characteristic of primates in controlled settings as opposed to primates in the wild. It was becoming evident that these primates, who were dependent on social learning, could not be determined as sexually asymmetrical by variables such as age, sex, and weight but that they exhibit considerable sophistication in their attempt to exert control (Fedigan 1989:42-43).

In her 1981 book entitled The Woman that Never Evolved, Sarah Blaffer Hrdy suggested three reasons for the development of a more feminist perspective to primate studies. What Hrdy proposed was that, beginning in the 1970s, academics became increasingly aware that evolutionary forces worked not only on males but on females as well. Primatologists began to concern themselves with the issues of cooperation and competition among and between both sexes. Previously, females were not perceived to cooperate with males nor to compete with anyone. New evolutionary models in sociobiology, such as kin selection and reciprocal altruism, suggested mechanisms which explained how cooperation between groups of genetically related members helped to ensure the inclusive fitness of each. Also, research reports repeatedly documented that female primates were also sexually assertive and, in some situations, could be

very competitive over resources (Fedigan 1989:43-4).

Hrdy's second reason for a shift in primate studies dealt with an improvement in methodology (Hrdy 1986:135-6). Longitudinal studies had already been accepted as beneficial and necessary to primate research. In her 1967 article "Variability in the Social Organization of Primates", Rowell addressed several of the methodological problems²³ in primate research. In her 1974 article "Observational Study of Behavior: Sampling Methods", Jeanne Altmann suggested that comparative approaches of any kind could only be conducted on individuals which were observed for equivalent amounts of time. This innovation was a response to research which was conducted through opportunistic sampling. Since, in many primate societies, males are larger than females, males inevitably caught the researchers eye and were thus recorded. Females were thus unintentionally discriminated against (Fedigan 1989:44).

According to Hrdy, the women's movement contributed to an ideological shift toward female researchers and subjects. A typical example is Jane Lancaster's famous article "In Praise of the Achieving Female Monkey" (1974) in which she suggests that because of shared experiences, wimmin may possess an enhanced ability to comprehend and empathize with their subjects. Fedigan asserts that female scholars might see the world differently from men because of their shared experiences and socialization (Hrdy 1986:17) (Fedigan 1989:44-45). According to Fedigan (1989:45)

[s]everal scholars in the social studies of science (e.g., Bleier 1984; Fee 1983, 1986; Gilligan 1982; Messing 1983) have suggested that Western Women scientists tend to be holistic and integrative thinkers, who, as a result of differential socialization practices, may be more attuned than men to the complexities and subtleties of social interactions, and less satisfied with

²³ See Chapter 2 for problems in the methodological practices of primatology.

reductionist principles of analysis (Keller 1983,1985, 1987). They argue further that the values traditionally defined as feminine may lead women to be generally more persistent and patient, willing to wait for the material to speak for itself rather than forcing answers out of it, and envisioning themselves as more connected to the subject matter than in control of it.

Because of the lack of information concerning female primate lives, and an abundance of information gathered during previous male-centered studies, an initial part of the feminist challenge was to gather data about these primates (Hrdy 1986:136). In the 1980s, several books concerning female primates began to appear, namely The Woman that Never Evolved (Hrdy 1981), Social Behavior of Female Vertebrates (Wasser 1981), Primate Paradigms (Fedigan 1982), Female Primates (Small 1983), Strategies of Being Female (Shaw and Darling 1984), The Female Animal (Elia 1985), and Female of the Species (Kevles 1986) (in Fedigan 1989:45).

Female scholars, now entering the field of primatology, may be doing so as a venue for feminists research or perhaps they are following in the footsteps of the above and below mentioned female primatologists. Nonetheless, current research in “feminist” primatology has only been possible because of the contributions of these and other wimmin scholars.

I am not denying the role which some men have played in primate research but the wimmin discussed in this chapter have and are changing the course of thinking about traditional models of primate behavior. This chapter will briefly profile the contributions of Jane Goodall, Dian Fossey, Thelma Rowell, Barbara Smuts, Jane Lancaster, Sarah Blaffer Hrdy, Jeanne Altmann, Biruté Galdikas, Shirley Strum, Sue Savage-Rumbaugh and Linda Marie Fedigan to the field of primatology (Table 1). This list is by no means complete and others such as Allison Jolly, Diane Sade, Meredith Small, Joan B. Silk, T. Nishida, and Adrienne Zihlman could surely be added. Nonetheless, each female primatologist profiled in this chapter has contributed

significant findings regarding primate social behavior.

Table 1 Major contributions of some wimmin to primatology

Primatologist	Year²⁴	Species²⁵	Appendix²⁶	Major contributions to primatological research
Jane Goodall	1960	chimpanzee	2	-discovery of nonhumyn primate tool use -importance of mother-offspring relationship and matrifocal units -long-term research, life cycle studies
Dian Fossey	1966	mountain gorilla	3	-dispelled myths about mountain gorillas -pilgrimage for the protection and conservation of the mountain gorilla
Thelma Rowell	1966	baboon	4	-addressed several of the methodological problems within primatological research -questioned male dominance hierarchical model -acknowledged individuality
Barbara Smuts	1970	baboon	5	-importance of reciprocal friendships between males and females as a factor in reproduction success -integration of social and biological theories
Jane Lancaster	1970	hanuman langur	6	-first to introduce a "feminist" perspective to primatology
Sarah Blaffer Hrdy	1971	hanuman langur	7	-introduction of a feminist perspective to sociobiology -importance of female competition
Jeanne Altmann	1971	baboon	8	-questioned "traditional" research methodologies and developed a non-experimental research design -uses a life history approach -focused on female lives
Biruté Galdikas	1971	orangutan	9	-long term study of orangutan behavior -introduced a non-aggressive dominance hierarchy
Shirley Strum	1972	baboon	10	-debunked male dominance hierarchical model
Sue Savage-Rumbaugh	1974	bonobo and chimpanzee	11	-attempts to grant apes semi-humyn legal status -introduced a new approach to animal language studies
Linda Marie Fedigan	1974	Japanese macaque	12, 13	-intervenes in the sexuality and linguistics of the politics of primatology -acknowledges the object/subject relationship of female scientific knowledge

²⁴ Approximate date when they began conducting intensive primatological research.

²⁵ Species most focused upon during their research.

²⁶ See appendix number for selected publications. Please note that these appendices are not inclusive of all works published by these authors.

i Jane Goodall

Jane Goodall is simply the most famous primatologist ever and the world's foremost authority on chimpanzees, having closely observed their behavior by living in the chimpanzees' environment and gaining their confidence for over 35 years. Her observations and discoveries have changed the nature of animal research and revolutionized thinking about both primate behaviour and human evolution. I have to say that she has inspired me and is one of the main reasons that I entered the field of primatology. In short, for me, she made scientific theory and data approachable and understandable. Since 1960, Jane Goodall has studied the free-ranging chimpanzees at the Gombe Stream Reserve in Tanzania.

As discussed in chapter one, the existence of “strong male mentors” has been suggested as a reason that women may have entered the discipline of primatology (Rossiter 1982 in Fedigan 1994:536). Probably the best known example of a “male mentor” is renowned paleontologist Louis Leakey because of his own popularity and because of his overt statement that women make better observers of primates (Fedigan 1994:536). In 1957, Louis Leakey chose British born Jane Goodall, a secretary with no academic training or experience in animal behavior, to conduct a long-term field study of wild chimpanzees. In 1960, accompanied by her mother Vanne, herself a strong female role model, Jane began research at Gombe, Tanzania.

Within a few months of observations, Goodall, made one of her most famous observations which changed the definition of “man”. Previously “man” was defined as a “tool-maker”, a characteristic which set “him” apart from all other living species. However, Goodall described how chimpanzees fashioned long stems of grass which they would insert into a termite mound to retrieve desired insects. She also observed that, in some cases, these tools were

constructed in advance, away from the mound. As Goodall later reported,

“[a]nd when I sent a telegram to Louis Leakey about seeing David Greybeard²⁷ using grasses to fish for termites, he made the now-famous remark, ‘ha-ha, now we must redefine man, redefine tools, or accept chimpanzees as humans’” (Goodall 1971b; <http://biosci.cbs.umn.edu/chimp/jgstory.htm>).

Because of her lack of academic training, it was not uncommon for colleagues to discredit Goodall’s work (Fedigan 1989:30). Some criticized her observations of chimpanzee “tool-making”. In 1968, K.R.L. Hall (1968b:146 in Reed 1978:16) wrote that there is a “tendency to overestimate the significance of such performance [tool-making]...largely because of the urge to discover equivalences to stages in human evolution”. In 1978, Reed (1978:16) wrote “...some primatologists have begun to overestimate the ability of primates to manipulate sticks and stones and have equated them with human tool-makers”. Nevertheless, the notion that nonhuman primates fashion tools is now largely accepted within the academic community.

Because of the lack of credibility attributed to Goodall’s work, Leakey persuaded authorities at Cambridge that her research findings were important enough to be written up in a thesis (Cole 1975:337). Goodall resented her time at Cambridge because it kept her away from Gombe, nevertheless she persisted with her studies and in 1965 received a Ph.D. In 1967 she became the director of the Gombe Stream Research Center.

Another important discovery by Goodall and her research team was that chimpanzees hunted and ate meat. At the time, this was sensational since scientists had previously regarded both tool-making and meat eating as specific only to humans among primates. As E. Adamson Hoebel wrote in 1949 (102), “[the carnivorous diet] more than any other single trait

²⁷ David Greybeard is an older male chimpanzee subject at Gombe Stream.

distinguishes [“man”] from his vegetarian anthropoidal relatives”.

When asked what has been her biggest discovery, Goodall states, “[t]he most important thing I have learned is the effect of early childhood experience on subsequent development” ([http://www.animalpepl.org/95/7/humane ed.html](http://www.animalpepl.org/95/7/humane%20ed.html))²⁸. Certain vital functions may be seriously and permanently affected by disturbances in the caretaker-child relationship even when no obvious behavioral abnormalities are apparent in the adult. In The Chimpanzees of Gombe: Pattern of Behavior, Goodall (1986) describes disorders in youngsters following the death of their mother. She concludes that “... even though the cost incurred through nurturing behaviors may in individual cases be high, for the most part the benefits outweigh them” (Goodall 1986:379).

Goodall’s methodological approach also revolutionized animal behavior research. For instance, she personalized chimpanzees by giving them a name instead of a number. Once again, for this she was discredited.

When I began observing chimpanzees in 1960, the concept of individuality in nonhuman animals was unpopular in scientific circles. In fact, the first technical paper I submitted for publication was returned by a major periodical with the suggestion that a few alterations be made: where I had written “he”, “she”, or “who”, these had been crossed out and “it” or “which” substituted (Goodall 1986:60).

Goodall also believes that chimpanzees are capable of altruism in their non-verbal communication patterns. According to her,

[t]hey show gestures that we’re so familiar with ourselves in human cultures around the world—kissing, embracing, holding hands, patting one another on the back, swaggering, tickling—gestures and postures that occur in the same kind of context as we see them in human cultures and clearly mean the same kind of thing (<http://biosci.cbs.umn.edu/chimp/jgstory.htm>).

²⁸ The effects of mothering and early childhood experience will be discussed further in Chapter 4.

Because of her methodological approach Goodall has been accused of anthropomorphism, however, other renowned primatologists such as George Schaller and Thelma Rowell claim that intelligent empathy contributes to our understanding of our closest relatives (Fedigan 1989:52).

As Fee (1986:47 in Fedigan 1989:52) puts it,

[i]n such feminist imaginings, the scientist is not seen as an impersonal authority standing outside and above nature and human concerns, but simply a person whose thoughts and feelings, logical capacities and intuition, are all relevant and involved in the process of discovery.

In reality, Goodall's "anthropomorphic" perspective clarified the whole area of primate relationships and social structure. As Audrey Manning (1971: 729) puts it, in a review of In the Shadow of Man, "[t]heir [chimpanzees] intelligence and individuality are such that interpretation in human terms is inevitable and, at this descriptive level of analysis, completely justified". Goodall's accumulation of life histories has clarified that each primate holds its own inherited and acquired personal characteristics. Understanding individual differences has helped understand behavior that would otherwise be puzzling.

Another important revolutionizing methodological component of Goodall's research is its longevity. Where other primatologists might have ended their research or claimed that certain behaviours were true nature to the chimpanzees, Goodall and her research team still continue to do research, constructing an ever more complex puzzle. As she has said repeatedly, if her research had ended at any time, our perception of chimpanzees would be incomplete and misleading (Fedigan 1989:51). When asked "how has our knowledge of chimpanzees progressed in the last 35 years?", Goodall explains,

[w]e're still learning after 35 years. And I think what strikes us most is how like us they are. We know today from biological research, that we differ from them

genetically in the composition of the DNA by only just over one percent. And this turns out to be unfortunate for the chimpanzees because some scientists believe that as a result of that similarity, they can be useful in finding out more about human diseases and searching for cures and vaccines--particularly things like hepatitis and AIDS. Because chimpanzees can be infected with those otherwise uniquely human viruses. And there are similarities too in the structure of the blood and the immune response (<http://biosci.cbs.umn.edu/chimp/jgstory.htm>).

But what is the explanation for Goodall's widespread appeal? In a 1973 article, Maggie Scarf attempted to answer this question. "Goodall's work has led many scientists to reassess 'the great gulf' which has been believed to separate the animal and human worlds".

Jane Goodall has made many other contributions to the study of primates. In 1977, The Jane Goodall Research Institute for Wildlife Research, Education, and Conservation was established in Ridgefield Connecticut (JGI) (<http://199.106.67.200/gsn/proj/jgi/jgi.info.html>; <http://www.wic.org/bio/jgoodall.htm>).

The Institute is committed to wildlife research, sharing knowledge through education, and conservation of the habitats that sustain life on earth. We are dedicated to researching and publicizing the unique status and special needs of chimpanzees, now an endangered species, to ensure both their long-term preservation in the wild and their physical and psychological well-being in captive settings" (<http://199.106.67.200/gsn/proj/jgi/jgi.info.html>).

Roots & Shoots is the JGI's environmental education and humanitarian program for local Tanzanian and international school aged youth. It "promotes hands-on activities to lead a better understanding of problems regarding environmental, animal, and community issues" (<http://night.primate.wisc.edu/pin/goodall.txt>). In Tanzania, children plant trees, clear refuse from beaches, and entire wildlife contests. In the US, children volunteer in animal shelters or learn to recycle. Goodall appropriately named this program Roots & Shoots because, in her words,

[c]hildren and students are the fertile ground where seeds, once planted, grow. The roots creep underground everywhere and make a firm foundation. Shoots seem new and weak, but, to reach the light, they will move boulders and break slabs of concrete. Hundreds of thousands of roots and hundreds of thousands of shoots around the world can change the world (<http://www.wcsu.ctstateu.edu/cyberchimp/roots/rsmember.html>).

In 1992, The Jane Goodall Research Center was established in the anthropology department at the University of Southern California to act as a repository for data gathered at the Gombe Reserve. The hypermedia archive in the Ethnographics Laboratory was developed to make it possible for students to pursue “virtual” studies of primates by using a multimedia system. Emphasized are the comparative study of human and chimpanzee behavior, the reconstruction of archaic patterns of human evolution, behavioral ecology, and environmental conservation (<http://www.usc.edu/dept/elab/anth/goodall.html>).

Jane Goodall’s many honors include the title of Commander of the British Empire bestowed by the Queen of England, The National Geographic Society’s prestigious Hubbard Medal, Japan’s Kyoto Prize in Basic Science, and many more. (<http://night.primat.wisc.edu/pin/goodall.txt>).

Today Jane Goodall spends most of her time travelling around the world lecturing about her experiences and about chimpanzee conservation.

Chimpanzees have given me so much. The long hours spent with them in the forest have enriched my life beyond measure. What I have learned from them has shaped my understanding of human behavior, of our place in nature (<http://www.wcsu.ctstateu.edu/cyberchimp/homepage.html>).

ii Dian Fossey

After several years of chimpanzee research, Louis Leakey's attention turned to the study of gorillas (Cole 1975:342). In 1966, Leakey sent American occupational therapist Dian Fossey²⁹ to study wild gorillas. Fossey's work dispelled myths about the violent and aggressive nature of the gorilla. She was able to identify each individual in her study and came to regard them as gentle social animals (<http://larch.ukc.ac.uk:2001/home/gorillas/background/fossey.html>).

Fossey conducted her research under high political instability. Her research began in 1967 at George Schaller's hut in the Belgian Congo (now Zaire) but as the frontier between Zaire and Uganda became closed, after six months of research, Fossey was ordered down the mountain and placed under house arrest for two weeks by the warden of the Albert National Park. She eventually escaped from Zaire and was later told that she would be shot if she ever returned. Thus, she started the long process of habituation once again, but this time on Mt. Visoke in Rwanda, five miles away from her previous camp on Mt. Mikenno (Cole 1975:340-343). Here she established the Karisoke Research Center in 1967. In Rwanda, her troubles were not over. Batwa poachers had troubled the gorillas and Tutsi herdsman were grazing up the mountain causing the gorillas' natural habitat to decrease (<http://larch.ukc.ac.uk:2001/home/gorillas/background/fossey.html>).

Fossey became very dedicated to the gorillas and found it very difficult to leave them. For this reason, she took several years to complete her Ph.D. but eventually graduated from

²⁹ An interesting footnote: Louis Leakey insisted that Dian get her appendix removed before entering the field. As Dian later stated to Leakey, "I won't be spilling viscera all over the mountain". Dian thought that Leakey made this condition in order to weed out any applicants who were not serious about doing fieldwork (Cole 1975:342).

Zoology at Cambridge University in 1974. In her 1983 book, Gorillas in the Mist, Fossey recounts her field work.

In 1985, Dian Fossey was found murdered in retaliation for her anti-poaching efforts. Due to research and conservation efforts, mountain gorillas are now protected by the government of Rwanda and the international and scientific communities. At the start of her study, Fossey estimated that there were 240 mountain gorillas in her area. Estimates now count nearly 350 (<http://larch.ukc.ac.uk:2001/home/gorillas/background/fossey.html>).

iii Thelma Rowell

In the late 1960s, Thelma Rowell (1966) began publishing the results of her long term study of free-ranging baboons. In her 1967 article “Variability in the Social Organization of Primates”, Rowell addressed several of the methodological problems³⁰ in primate research. For example, Rowell (1967:227) acknowledged the limitations of research on nonhuman primates in captive settings.

The captive environment will inevitably be far simpler, and therefore easier to describe [than natural settings]...In assessing the cage environment and the limitations imposed, it is enormously helpful, almost essential, to have some knowledge of the animal in the wild. As a trivial example, baboons and rhesus monkeys carry their babies on their backs in the wild. They do not do so in cages where they frequently go through low doors.

Rowell also addressed the issue of the size and spatial arrangement of the cages or the captive environments in which primates are held. She noted that

... a caged group occasionally appears to “get trapped” in a cycle of agonistic interaction which goes on and on until the animals inflict serious damage on each

³⁰ See Chapter 2 for problems in the methodological practices of primatology.

other. In the wild these interactions do not go on too long because one individual goes out of sight behind a bush until the other has forgotten about the incident (1967:228).

As captive primates do not have to forage for their provisions, most of their time is spent in social situations. If environmental conditions are bad enough in the wild, social behavior almost disappears. Therefore, according to Rowell (1967:228), captive primates have much more frequent social interactions which increases the risk of agonistic behavior

Another of Rowell's observations regarding a methodological flaw in primatological research is the duration of early primate studies of the time. According to Rowell, in 1967,

[n]o study of social behaviour has yet been long enough. This is especially true of field work but even artificially established manipulated colonies have not been followed consistently, without drastic interference (Rowell 1967:222).

Latter research proved that behavior occurs in context. Behavior was thus variable and it was therefore necessary to keep detailed records of individual observances over a period of time (Bramblett 1976: 25). Rowell points out that some primate relationships might not be obvious to a new and unfamiliar observer. Rowell was aware that primate social relationships of free-ranging groups were based on long term relationships particularly those of a mother and her offspring and that longitudinal studies were imperative for adequate research. More specifically, "... no one has followed a wild group long enough to find out if inter-adult relationships are affected by year-class or family" (Rowell 1967:222).

Rowell also acknowledged the variability within and across primate species (Rowell 1967). Early scientists appear to have presumed that behavior was stereotyped and controlled whereby if a researcher observed one behavior from one member of a species, it was presumed that all members of the same species, or even primates as a whole, behaved in the same manner.

According to Bramblett (1976: 5),³¹

...there is an unfortunate tendency for a scientist who works extensively with one particular species to view the world in terms of the biology of that species, thus sacrificing the advantage of the comparative advantage.

To the contrary, Rowell acknowledged individuality among each member of a primate group (Fedigan 1989:47). According to McKenna (1982:54) the longer an individual primate is observed, the more distinct it becomes. Due to Rowell's work in these areas, Fedigan (1989:47) noted,

[t]he recognition that even within one species, individuals and groups may behave quite variably led to an increasing wariness among primatologists about premature generalizations, and an awareness that the behavior of our subjects is more flexible and complex than we had first thought.

Rowell's description of primate social life differed from that of earlier researchers such as Washburn and DeVore, who favored an androcentric model. Instead, Rowell described baboon societies with stable and fixed matrilineal units, mobility of males between groups, and groups without specialized male roles or detectable dominance hierarchies. In her influential article "The Concept of Dominance", Rowell (1974) criticized and called for the reassessment of the male-hierarchical model (Fedigan 1989:47). Backed by her many years of studying free-ranging baboons, Rowell argued that dominance was a limited and a learned aspect of social behavior. This coincided with literature which was claiming that, for animals as intelligent and dependent as primates, social behavior could not be determined simply by biology (Fedigan 1989:42).

³¹ Claud A. Bramblett graduated with a Ph.D. in 1967 during the height of the Sherwood Washburn program. With his wife Sharon, he did research at the LaMoca site in Texas where he observed Japanese macaques. He taught physical anthropology to Linda Marie Fedigan at the University of Texas.

iv Barbara Smuts

While still an undergraduate and influenced by Robert Trivers,³² Barbara Smuts studied rhesus monkey behavior at La Cueva, Puerto Rico. Her paper “Natural Selection and Macaque Behavior”, was the first systematic attempt to apply what was later to become sociobiology. In 1972, she met David Hamburg³³ at the Congress of the International Primatological Society and decided to attend Stanford University for graduate work where he was teaching. Since her childhood, Smuts had been fascinated with chimpanzees and dreamed of going to work at Gombe. Eventually, at Stanford, she met Jane Goodall and in collaboration with Robert Trivers she soon began to study adult females at Gombe (Haraway 1989:176). At the Gombe site in 1975, Smuts was kidnapped by guerrillas but released one week later to communicate their demands to the Tanzanian and American governments (Haraway 1989:169).

Smuts did her doctoral research at Shirley Strum’s baboon site at Gigil in Kenya. In the 1980s, Smuts (1983a,b, 1985) revealed important facts about baboon societies. She supplied data and arguments contradicting the “dominance equals reproductive success” model which assumed that dominant males have first and best access to receptive females therefore producing more offspring. She found no correlation between dominance and reproductive success. In fact, in her study of baboons, she had great difficulty determining a male dominance hierarchy

³² Also a sociobiologist, Robert Trivers adheres to Darwin’s theory of sexual selection. He claims that the sex contributing most to the production and rearing of offspring is the sex that gets competed for (Hrdy 1981:22). He thus proposes that females enhance the fitness of their offspring by selecting males with superior genotypes (Hrdy 1981:150). In the 1970s, Trivers taught sociobiology at Harvard.

³³ As a psychiatrist, David Hamburg focused his research on humyn coping behavior under stress. Hamburg was an advocate of experimental animal model research in the Psychiatry Department of the Stanford Medical School and a founder of the undergraduate department of Human Biology at Stanford University. In 1972, he collaborated with Jane Goodall at Gombe. In 1975 he became the President of the National Institute of Medicine of the National Academy of Science (Haraway 1989:167-9)

(Fedigan 1989:48).

Instead, in Sex and Friendship in Baboons (1985), Smuts focused on the importance of reciprocal friendships between males and females as a factor in reproduction success. “She argue[d] that baboons are sentient animals who pursue cross-sex friendships in a system of reciprocal exchange of social benefits, not necessarily involving directly enhanced reproductive success” (Fedigan 1989:58). Smuts also argued that older males exhibited different types of competitive skills that reflected their maturity and learned behavior which was not yet acquired by larger, stronger and younger males (Fedigan 1989:48-9). Although she had not been the first to acknowledge such relationships,³⁴ Smuts was the first to document that females mated with males whom they had had a previous relationship and not necessarily with those who were “dominant”³⁵ within their society.

v Jane Lancaster

A Ph.D. student of Sherwood Washburn at UC Berkeley in 1967, Jane Lancaster observed the social organization of vervet monkeys in Zambia for two years. Contrary to the male hierarchy theory, Lancaster found that females played “hefty roles in monkey society” (Lancaster 1973:30). In her now famous 1973 (30) article , “In Praise of the Achieving Female Monkey” she stated,

...recent primate studies indicate that earlier researchers may have concluded too much from insufficient data and that female primates have a far larger role than that of mother. Now, more than ever, we need to know if apparent differences in behavior between men and women are more or less biologically fixed or heavily

³⁴ See Altmann 1980, Strum 1983a and Seyfarth 1978.

³⁵ For further discussion on “dominance” see Chapter 4, section on “dominance”.

influenced by experience.

This article was very important at the time because it firmly addressed traditional notions of female primates, noting that female matrilineal groups formed the social core of primate groups and that females held much of the transmitted knowledge between generations. Lancaster was one of a few authors of the time who suspected that female dominance relations were important to the evolution of primate societies (Hrdy 1981:201).

In addressing androcentric perspectives of primate behavior which state that females are more interested in infants than in hierarchies Lancaster (1973:32) stated,

[t]here is nothing new or unique in this point of view. It is simply a scientific statement of folk beliefs about the differences between men and women. This perspective has influenced most anthropological studies of other societies. In these studies the social-political behavior of females and non-adults rarely gets mentioned, much less fully studied, because women and children have been considered social pawns or possessions of adult males, not full members of society.

In the introduction of a very important book entitled Female Primates: Studies by Women Primatologists (Small 1984), Lancaster looked at field studies to understand four areas of sexual dimorphism (Lancaster 1984:7-8 in Haraway 1989:291) namely,

1. sex differences in dominance;
2. mating behavior and sexual assertiveness;
3. attachment to home range and natal group and;
4. Ecological and social correlates of sex differences and body size.

Lancaster (Haraway 1989:291) found that

1. females are competitive and take dominance seriously;
2. females also wander and are not embodiments of social attachment and conservatism;
3. females are also sexually assertive and;
4. females have energy demands in their lives as great as those of males.

Jane Lancaster's research is important to primate studies because she is one of the first

female primatologists to locate herself at the intersection of feminism and primate biosocial science (Haraway 1989:332).

vi Sarah Blaffer Hrdy

In 1970, during her first year of graduate studies at Harvard University, Sarah Blaffer Hrdy began research on infanticidal behavior by males with the premise that infanticide was a response to crowding. Several months after she started fieldwork on hanuman langurs in Rajasthan India, Hrdy abandoned her original hypothesis and adopted an interpretation based on Darwin's theory of sexual selection. She concluded that infanticide by males was an outcome of male-male competition for access to females. As every 27 months a male was responsible for the death of an infant, Hrdy turned her attention toward the plight of the female langur (Hrdy 1986:139),

...my identification was with the female victimized in this way, not with the male who, according to the sexual selection hypothesis, was thereby increasing his reproductive success. (Hrdy 1986:139).

For Hrdy, a feminist discourse in sociobiology elicited the importance of the reproductive strategies of female primates. The premise of Hrdy's popular book The Woman that Never Evolved (1981) is as she puts it "to correct a bias within the evolutionary biology, to expand the concept of "human nature" to include both sexes" (Hrdy 1981:189). According to Fedigan (1989:57), Hrdy's book is a unique attempt to combine a sociobiological and feminist approach to theory.

According to Hrdy, one important theoretical flaw in Darwin's theory of natural selection was that he failed to acknowledge that *competition* also affects female evolution.

Darwinism, which analyzes all the diverse forms of life according to the theory of natural selection, describes competition between unequal (or different) individuals, but places no value judgment on the competition or its outcome (Hrdy 1981:12-13). Darwin did not argue straightforwardly that selection only effected males, however, he did not acknowledge the outcome of some selected forces on females.

By stressing female variance, Hrdy asserts that selection acts on females as well as males in promoting genetic fitness. She claims that female reproductive fitness can vary as a function of female mate choice, elicitation of male support, competition with other females for resources, cooperation with other females and female biological efficiency (Haraway 1989:365).

Rather than focusing on a model which emphasizes maternal investment, Hrdy asserts that females are also productively strategic. She notes that limited food resources is inherent to female sexual politics. Hrdy bases this theory on Wrangham's (1980)³⁶ female-centered model for social systems which argues that female competition for scarce resources such as food drives the entire primate social system. This is not to denounce female investment in offspring rearing but simply an acknowledgment that food production also plays a large part in the lives of nonhuman female primate social structure. As food consumption is the pivot of social politics, competition among assertive, dominance oriented females is central to primate social life.

...[T]he central organizing principle of primate social life is competition between females and especially female lineages. Whereas males compete for transitory status and transient access to females, it is females who tend to play for more enduring stakes (Hrdy 1981:128).

³⁶ Richard W. Wrangham is an influential British primatologist who was influenced by the ethological tradition at Cambridge where he was a graduate student (Haraway 1989:168). One of his areas of focus is concerned with female primate social organization. (Hrdy 1981:122-3).

Females will distribute themselves in relation to the resources that are beneficial to them. Males will space themselves in relation to the females. Coalitions and cooperation are related to economic survival and will take on various forms according to the genetic investment and principles of methodological individualism (Hrdy 1981:122-27; Haraway 1989:364-5). Thus, individuality is taken into account.³⁷ For instance, variation in maternal skills is related to the variation in reproduction interests which are sometimes at odds with those of the offspring (Sperling 1991:216). Specifically, an infant who is being weaned might show displeasure and aggression toward its mother because it does not want to sever such a tie but separation is necessary to the mother's investment strategies.

In her book The Woman that Never Evolved (1981), Hrdy argues against Donald Symons' view that female orgasms were a product of male adaptation. Since, as he believed, humyns were created from a bipotential plan, Symons understood the female clitoris as a "remnant" of the male penis. Similarly, nipples are observed in both females and males but are only adaptively meaningful in females. Hrdy argues that sexual pleasure can give an added competitive edge to competing females pursuing their own reproductive end into a resource (males) which produces sexual pleasure (Haraway 1989:363).

Because most feminists and many anthropologists have found sociobiology to be inherently androcentric, Hrdy's work has been attacked even though she attempts to rectify sexist problematic issues within sociobiological theory. Those who criticize Hrdy argue that she presents a desolate and deterministic picture of female primates (Fedigan 1989:57). Sperling

³⁷ According to Charles Laughlin (personal communication), professor of anthropology at Carleton University, this can be problematic. "The trouble with the sociobiologists generally, is that they consider the individual to be the locus of selection rather than the gene pool".

(1991:217) wrote.

...[i]t has now become fashionable for both biological and environmental reductionists to claim interactionism as the only reasonable view, and then to revert immediately to the reductionist theories that belie their assertions... Feminist sociobiology does not represent progress for feminist evolutionary science because it suggests a biological essentialism at the heart of human behavior.

But Hrdy disclaims the reductionist view of sociobiology's popular interpreters (1991:218) and acknowledges the importance of human cultural transmission and the possibility that culture may effect behavior or social relationships. Hrdy (Haraway 1989:350) who unquestionably considers herself a feminist sociobiologist, insists that sociobiology must be credited for explaining female primate social behavior.

As Haraway (1989: 365) puts it,

[t]he bottom line of the story is that females evolve too. That is, females, as well as males, differ among themselves in parameters that matter to differential survival and fecundity, and so are subject to natural selection. The point of this story is that females are dynamic actors of self- and species-forming dimensions

vii Jeanne Altmann

Since 1971, most of Jeanne Altmann's empirical work, in collaboration with her husband Stuart Altmann and other colleagues and students, has been conducted on baboons at the Amboseli National Park, Kenya. Altmann has been noted for her introduction of a non-experimental research design and because of her use of a life history approach to behavioral ecology.

Jeanne Altmann has organized her practice around the premise that "[t]he true situation may be the opposite of the apparent one" (Altmann 1980:169). In her now famous 1974 article

“Observational Study of Behavior: Sampling Methods”, Jeanne Altmann developed unbiased sampling techniques which she called “non-experimental research design”.

...Altmann was widely recognized among field workers for setting standards that progressively had to be met if one’s descriptions and explanations of regularities emerging from field studies of monkeys and apes were to be taken seriously (Haraway 1989:304).

Her techniques were not concerned with the problems of choosing research questions and defining behaviour categories but worked on the premise of

...how does the choice of sampling method restrict the kinds of behavior processes that can be studied? Or, conversely, given a particular behavioral research problem what sampling methods are suitable for it (Altmann 1974:228).

Altmann surveyed seven field-work sampling methods including *Ad libitum* sampling, sociometric matrix completion, focal-animal sampling, sampling all occurrences of some behaviours, sequence sampling and one-zero sampling (Altmann 1974:227), for their strengths and weaknesses regarding questions that a researcher might ask. She then recommended when to use a given method and discussed the way to go about it (Haraway 1989:305). Altmann noted that,

a primary function of research design is to maximize the validity of the conclusions[...], i.e., to minimize the number of plausible alternative hypotheses that are consistent with the data.

According to Haraway (1989:307)

[her] paper destabilized a great deal of previous primate field research, including that by senior and powerful people. The embarrassing truth was that many of the regularly cited field studies especially before the mid-1970s both gathered and analyzed data in a way that did not justify the conclusions reached.

Because of her critique of sampling techniques, Altmann’s research was fundamentally

significant in destabilizing “traditional” perceptions of females primates and motherhood.

In 1980, she published the results of her long-term study of free-ranging baboon mothers and infants in a book appropriately titled Baboon Mothers and Infants. In contrast to the male hierarchal model which suggested that females were passive recipients of male baboon actions, Altmann emphasized the importance of adult females’ productive and social as well as reproductive behaviour. Although nonhuman female primates spend a great amount of time and energy in direct reproductive activities, Altmann acknowledged that “they also must acquire enough food to sustain themselves and their unweaned young, and they must socialize in order to survive successfully in a social group” (Fedigan 1989:48). Altmann’s book also pioneered the study of monkey mothers and infants living in complex social groups not seen in laboratory settings (Fedigan 1989:56).

Currently, Altmann is Chair of the Committee on Evolutionary Biology, on the Committee on Biopsychology at the University of Chicago and a Professor in the Department of Ecology and Evolution. She is also a Curator of Research at the Brookfield Zoo where she and her students have begun “concurrent studies of behavior, ecology and demography at the level of individuals, social groups, and populations” (<http://www2.uchicago.edu/bsd-ev-bio/altj.htm>).

viii Biruté Galdikas

After two successful research endeavors, Louis Leakey turned his attention to another of the great apes, the orangutans. Leakey sponsored naturalized Canadian Biruté Galdikas Brindamour, accompanied by her husband Rod Brindamour, to study orangutans in Borneo. With a B.A. in psychology minoring in zoology and an M.A. in anthropology, Leakey was

certain of Biruté academic qualifications for the position. Her research would enable her to complete her Ph.D. at UCLA in 1978 (Cole 1975:347-50).

Because of delays in research grants, Galdikas spent her first two years studying orangutan behavior at the Los Angeles County Zoo. During that time she got a temporary post at Simon Frazer University in British Columbia but in 1971 she set off for Borneo (Cole 1975:347-50).

Galdikas observed that adult orangutans are not demonstrative and are most often solitary. Orangutans generally do not embrace or groom one another, or share food, however, adolescent and adult females might team up for days without fighting. Galdikas attributes this lack of aggression to the fact that orangutans are solitary animals and therefore do not need or depend on each other. She compares a meeting of female orangutans to a meeting of old friends who don't need to talk to enjoy being together (http://www.lpzoo.com/ark/orang_article.html).

Male orangutans are even more solitary than females but nevertheless maintain a dominance hierarchy for years without often interacting. Dominance is maintained by recognizing each others' calls. She contrasts this to the male chimpanzees' physical display, a difference she compares to that between playing football and playing chess (http://www.lpzoo.com/ark/orang_article.html).

Right from the beginning, Galdikas reared orphaned ex-captive babies. Her first babies came from neighboring villages. The Orphaned Orangutan Education and Care Center was established on site in Borneo and still helps to rehabilitate and release many orangutans back into the wild (<http://www.ns.net/orangutan/president.html>).

Like Jane Goodall, Galdikas is also familiar to the popular media having been featured

twice on the cover of National Geographic, having been featured in articles in Life Magazine, The New York Times, L.A. Times and appearing in numerous television documentaries such as Good Morning America and Eye to Eye with Connie Chung (<http://www.ns.net/orangutan/president.html>). .

Galdikas has received several awards including the PETA Humanitarian Award (1990), the Eddie Bauer Hero of the Earth (1991), the Sierra Club Chico Mendes Award (1992) the United Nations Global 500 Environmental Award (1993) (<http://www.science.ca/css/gcs/scientists/Galdikas/galdikas.html>), Indonesia's "Hero for the Earth" Award, the Tyler Prize for Environmental Achievement, the Mini-Nobel Science Award-Gustavus Adolphus, the Institute of Human Origins Science Award, the Order of Canada, the Canadian Queen Elizabeth II Commemorative Medal, and the Chevron Conservation Award (<http://www.ns.net/orangutan/president.html>).

Since 1971, Biruté Galdikas has lectured extensively and educated local and international communities about the orangutan and the rainforest. As a result of her on-going field research, Galdikas has conducted the longest, on-going continuous study by one principal investigator of any mammal in its natural habitat (<http://www.ns.net/orangutan/president.html>). In 1986, Galdikas co-founded the Orangutan Foundation International (OFI) in order to support her research and work in Borneo and around the world. Through the OFI, Galdikas helped draw attention to the illegal trade of orangutans in Taiwan. As a result, the Taiwanese government decided to ban the import of all primates, the Orangutan Foundation Taiwan was created and, ten orangutans known as the "Taiwan Ten", which had been confiscated to Indonesia, were repatriated (<http://www.ns.net/orangutan/president.html>).

Galdikas is currently involved in several major projects including,

1. The maintenance of Camp Leakey (Borneo orangutan site);
2. The restoration of degraded forests in Borneo;
3. The maintenance of the Orphaned Orangutan Education and Care Center in Borneo;
4. The development of a sanctuary for abused, abandoned and confiscated North American privately-owned circus or entertainment orangutans in the United States;
5. Advising on captive orangutan populations around the world;
6. The education of youngsters on endangered orangutan populations;
7. Increasing on-going understanding of the orangutan species by providing detailed knowledge to the scientific community;
8. President of the Orangutan Foundation International and Honorary Chairperson and Scientific Director of all it's international chapters; and,
9. Professor of Anthropology at Simon Fraser University in British Columbia (<http://www.science.ca/css/gcs/scientists/Galdikas/galdikas.html>) (<http://www.ns.net/orangutan/president.html>).

In her words, Biruté Galdikas states,

[w]hat I have learned from orangutans is that we humans must not turn our backs on our own biological heritage. Modern society promotes the ideal of the rugged individual. For men you have the Clint Eastwood persona--the Marlborough Man. For women you have single moms raising their kids alone. The ideal Western male rides into town, fights the bad guys, falls in love, and then heads off into the sunset. He is strong and solitary just like an orangutan but he represents an evolutionary dead-end. Many of today's problems are a result of abandoning our human biological roots. We must look to our distinctive gregarious human heritage; living and working in family groups and communities if we want to be successful. Otherwise we are just stressed out 'orangutans' in an urban setting (<http://www.science.ca/css/gcs/scientists/Galdikas/galdikas.html>).

ix Shirley Strum

After spending nearly two decades in Kenya, Shirley Strum (1987) wrote that, after studying under Washburn at Berkley, she began to do fieldwork in 1972 with a traditional model of baboon society. She quickly discovered that her assumptions did not fit her research groups. Instead, she found that, as a group, males did not resort to aggression but spent most of their

time working on social relationships. When they did resort to violence, she found it difficult to determine consistent winners. Hence, dominance hierarchies were not evident, consistent or linear. Strum (1982) also observed that younger males, who usually initiated aggressive encounters, were usually winners over older males when relatively unimportant resources were at stake, but that when desired resources such as meat or sexually receptive females were at issue, it was the older more mature males who came out on top (Fedigan 1989:49). Females, on the other hand, were observed to spend less time on social positioning and more time on individual tasks of production and reproduction.

Why were older, weaker males “dominant” over the younger, stronger males? According to Strum, “social strategies” may be an alternative to aggressive behavior. “Dominant” males rely on systems of social reciprocity which they must actively and continuously construct and maintain. As Strum (1987:151) stated, “real power resided with those who were ‘wise’, rather than those who were ‘strong’...” (Fedigan 1989:49-50). According to Fedigan (1989:49),

... this conclusion was either ignored or hotly rejected by primatologists. Like Thelma Rowell before her, Shirley Strum discovered there are vested interests in the traditional views of male dominance and great resistance to a different version. To this day, one can read journal articles in primatology stating as an accepted fact that dominance determines reproductive success, and that no one has ever found anything but a positive correlation between the two variables.

x Sue Savage-Rumbaugh

Sue Savage-Rumbaugh received her B.A. in psychology from Southwest Missouri University and her M.S. and Ph.D. (in 1974) from the University of Oklahoma. (http://cug.concordia.ca/~scol/publect/ssav_lec.html). She is currently at Georgia State University and is one of the leading researchers on ape language (Seabrook 1994a, 1994b).

Savage-Rumbaugh's language research with chimpanzees and bonobos has drawn widespread academic attention. Her research, done in conjunction with her husband Duane Rumbaugh, was conducted at Emory University's Yerkes Primate Center and at Georgia State University's Language Research Center (Seabrook 1994a).

Savage-Rumbaugh and others who conduct language research on apes have come under criticism. While acknowledging physiological similarities between humyns and other primates, some researchers suggest that mental experiences are not shared. This position is particularly held among linguists, such as Noam Chomsky, who argue that conscious thought is only made possible by the specifically humyn attribute of language. Earlier studies of ape language were attacked by linguists and psychologists who argued that subjects appeared to be mimicking researchers in order to get a positive response (Mitani 1995). "Animal language research fell into disrepute in the late 1970s when "talking" chimps like Washoe and the provocatively named Nim Chimpsky were exposed as unintentional flaws" (Johnson 1995).

At about the same time, in response to negative criticisms of animal language, Rumbaugh took up the challenge of redesigning ape language studies by questioning some of the premises underlying previous research (Mitani 1995). She felt that it is more important to concentrate on the question of whether apes understand humyn language or the signs they reproduce instead of questioning their grammatical skills (<http://halley.pepperdine.edu/studios/ed655/kwlepore/anthro.html>).

Attempting to shift the fulcrum of the debate over performance versus comprehension, Dr. Savage-Rumbaugh argues that the linguists have things backward: "Comprehension is the route into language," she says. In her view it is easier to take an idea already in one's mind and translate it into a grammatical string of words than to decipher a sentence spoken by another whose intentions are unknown (Johnson 1995).

Rumbaugh, in collaboration with science writer Roger Lewin, has demonstrated in her most recent book, Kanzi: The Ape at the Brink of the Human Mind (1994), that apes have the ability to acquire language and communicate with other primates and humyns. She also concluded that, “in their anatomy, social behavior, vocalizations, sexual exploits, infant care and mental abilities, bonobos possess an eerie human quality” (Seabrook 1994a). Her book also explains how her research and developments derived from her research can help find practical application in teaching communication skills to very young children with severe mental disabilities (Mitani 1995).

In her book, which is a summary of her 20 year research program, Rumbaugh describes a current approach to ape language being used by bonobos *Kanzi* and two infant females. Kanzi came into the project in an unusual fashion. As Rumbaugh found little progress trying to teach language on lexigrams to Matata, Kanzi’s adopted mother, she observed that without being trained and presumably eavesdropping on mother’s lessons, Kanzi had learned how to use the visual symbol system to communicate (http://cug.concordia.ca/~scol/publect/ssav_lec.html). Thus, Rumbaugh concluded that exposure to language must start at an early age and that lessons should be driven by the curiosity of the subjects and not forced upon them (Johnson 1995).

Although Savage-Rumbaugh has not particularly focused upon “female” issues, as a female she has significantly contributed to primate studies. Her intensive years of research on bonobos and other apes has given Savage-Rumbaugh a sense of responsibility toward our closest relatives. This is evident in her effort to make apes eligible for “semi-human” legal status. She believes that this status would raise immense legal and moral issues concerning apes’ use in experiments and in zoos. Rumbaugh is convinced that apes’ emotions, intellect and

consciousness are at least “morally equivalent” to those found in very young children or mentally challenged individuals. As Rumbaugh (in Seabrook 1994a) appropriately states, “we certainly would not put these children in a zoo to be gawked at as examples of nature nor would we permit medical experimentations to be conducted on them”.

xi Linda Marie Fedigan

Although Jane Goodall greatly influenced my decision to enter the field of primatology, I must admit that Linda Marie Fedigan’s current research encompasses some of my fundamental perceptions about “feminist primatology”. As she states

[b]eginning with an interest in how the gender of the scientist affects their research on sex differences, I have moved to a wider focus on the role of women in science, particularly in anthropology and primatology (<http://gpu.srv.ualberta.ca/~lfedigan/fedigan.htm>).

Linda Marie Fedigan earned her Ph.D. under former Washburn student Claud Bramblett at the University of Texas in 1974. Since it began in 1972, Fedigan has been associated with the Arashiyama West East Primate Station at LaMoca, Texas, where she did her doctoral research. Her research with the monkeys at the site focuses upon long term reproductive patterns in females, especially life history data. Fedigan has run field schools, supervised many student thesis projects, and helped to arrange exchanges with Japanese primatologists (<http://gpu.srv.ualberta.ca/~lfedigan/fedigan.htm>).

At LaMoca, Fedigan wrote a book entitled Primate Paradigms: Sex Roles and Social Bonds (1982) which focuses on the sex differences in primate behaviour. Here, Fedigan succeeded in acknowledging and rectifying “traditional” androcentric views of primate societies

prevalent in the 1960s and 1970s (Fedigan 1989:56). According to Haraway (1989:320), “the book...showed the effects of deepening debates within both primatological and feminist discourse on sexual differences”.

In 1983, Fedigan initiated The Santa Rosa Primate Field Project in Costa Rica. The continuous long term goal of this project is to describe the behavioral ecology, demographic trends, and life histories of the 3 primate species living within the park. Life history data are also collected on selected females of each species (<http://gpu.srv.ualberta.ca/~lfedigan/fedigan.htm>).

The particular kind of monkey which Fedigan studied emerged from her critique of androcentric traditional sociobiological models of primate behavior. In The Social Life of Monkeys and Apes (1932), Sir Solly Zuckerman had proposed that sex is the fundamental basis of society and that sexual attraction is the ultimate (and most important) source of social bond (Bramblett 1976:5, 8). Fedigan (1983:112-113 in Haraway 1989:323) denies the notion that females are passive “objects” and that females’ best reproductive strategy is to choose a more “dominant” male. She notes that these assumptions were developed in the absence of systematic research on the actual choice of sexual partners despite the fact that female choice is central to Darwin’s original model of sexual selection.

Fedigan’s publications concerning wimmin in science include “papers on the role of women in models of human evolution, gender and the study of primates, science and the successful female, and historical analyses of the effects of gender and feminism on changing ideas in primatology” (<http://gpu.srv.ualberta.ca/~lfedigan/fedigan.htm>). Fedigan focuses on the objects/subject relationship of primate scientific knowledge. She believes that the animal-human relationship is important in the political science of being female (Haraway 1989:316). She also

acknowledges that empathy is an important part of the construction of what counts as experience and knowledge (Haraway 1989:317). Her article “Gender and the Study of Primate” (1989) has been greatly influential to my work in feminist primatology. Here she discusses the general trends in primatology in relation to feminist scholarship as well as perceptions of female primates.

Currently Fedigan is a professor at the University of Alberta. She has recently completed field work in Japan and published an edited volume surveying research conducted on monkeys in Japan and in North America over the last 35 years (<http://gpu.srv.ualberta.ca/~lfedigan/fedigan.htm>).

II Conclusions

The past few decades of primatology have been singled out in feminist literature as a model of non-sexist research and theory since both men and women have acknowledged, criticized and worked to rectify former biases. As primatology has been plagued with problematic and androcentric perspectives on primate behavior, the above mentioned female scholars have challenged and changed our perception of nonhuman primate behavior. Each female primatologist profiled in this chapter has contributed a unique perspective and understanding to primate social behavior. As this chapter has focused on the role of female primatologists within primatology, the next chapter will draw upon the more female centered studies conducted by the above mentioned academics as well as other more female-focused researcher in order to discuss the role of nonhuman female primates within their societies.

Chapter Four - Feminist Perspectives on Nonhumyn Female Primates

I The Role of nonhumyn female primates

As a comparative field of study, primatology has attempted to determine the role of nonhumyn female primates in their various species-specific societies in order to understand better the role of humyn female primates within society. As previously stated, prior to the 1960s and the work of a number of female researchers, behavioral primatologists generally portrayed rigid male dominated societies in which females were subservient to maternal roles or to the sexual needs of the dominating males. Since it was assumed that female primates were passive components of a “naturally” male dominated environment, it was “natural” to assume that all primates, including humyns, followed this “natural” disposition (Ward 1996:86). Some researchers, such as Rowell³⁸ who acknowledged several methodological flaws in primate studies, discovered that the role or behaviors of nonhumyn female primates was not as previously assumed. Therefore the question arises as to what “role” the female primate plays within her society.

In the preceding chapter, I discussed how several wimmin academics have addressed this question. In this chapter, I will further discuss some of their contributions, as well as contributions made by other scholars, which constitute a more feminist perspective on nonhumyn female primates. Specifically, I will indicate how “feminist primatology” has transformed our views of female nonhumyn primate mother-offspring relationships, matrifocal units, female or family coalitions, divisions of labour, sexual dimorphism, and dominance.

³⁸ For a further discussion see Chapter three, section of Thelma Rowell.

i The mother-offspring relationship

In the higher primates, early experience plays a fundamental role in shaping adult behavior. Early bonding, an affectional attachment that one individual forms toward another, is of crucial importance to a developing infant.³⁹ This emotional bonding or attachment begins in an evolutionary and developmental sense with the mother-infant bond.⁴⁰ Hence, at the heart of the social unit is a mother and her offspring.

In attempting to explain the dynamics of the process of the primate mother-infant attachment, I refer to Bowlby's (1958;1969) ethological attachment theory. Besides protection and nutritional need, an infant needs necessary "contact comfort", continuing care and stimulation from one or a small number of caregivers in order to thrive physically and psychologically. As Harlow's (1961) research on maternal deprivation in monkeys concluded, primate infants have an innate biological-based need for social interaction which might be best satisfied by a caregiver (Lamb et al. 1985:12). This reasoning is derived from an evolutionary biological perspective which emphasizes the importance of natural selection in the shaping of behavioral systems within any species.

According to Bowlby (1958;1960), it is effective for a defenceless infant to keep in very close proximity to its adult caregiver. Operationally speaking, as "proximity" to a maternal figure developed through natural selection, signals such as crying, whimpering, grasping, or clinging helped to ensure physical closeness to the caregiver. As these signals proved effective,

³⁹ The use of the term "bonding or bond" does not refer to the controversial notion that the first moments after birth are of crucial importance to "bonding" or attachment, but rather it refers to a gradual natural process by which an infant develops an affectional attachment to its mother or caregiver.

⁴⁰ When referring to a mother-infant bond, the term "mother" is loosely interchangeable with the term "caregiver" and the term "bond" with "attachment".

they became part of the behavioral system.

Bowlby's (1958;1969) model explains the importance of "the adult" by the need for promptness and an appropriateness response to the signal of the infant. Adults are thus equipped with a repertoire of caregiving responses which complement the infants' needs. Thus, the infant becomes attached to the caregiver who responds (Bowlby 1969; Lamb et al. 1985:13)

Some evidence has shown that the disruption of the mother-infant bond in nonhuman primates can lead to behavioral disturbances.⁴¹ Yerkes (1943 in Goodall 1967:292) reported that the behavior of captive chimpanzees⁴² toward their newborn varied. Some inexperienced mothers refused to have any physical contact with their infants. Van den Berg (1959 in Goodall 1967:292) reported one captive gorilla mother, who after pulling her infant from her vagina, bit off its hand, foot and punctured its skull. Harlow, Harlow and Hansen (1963 in Goodall 1967:292) reported that rhesus monkeys who had been isolated mistreated their offspring by either ignoring or physically abusing them. All of this suggests that some experience gained by watching other females may contribute to the efficiency of maternal traits (Goodall 1967:292).

Hinde and Spencer-Booth (1971) found that adolescent rhesus macaques who had been isolated less than three weeks from their mother during infancy were more depressed, fearful and less adventurous than others and that these differences were persistent. Similarly, Savage-Rumbaugh (1974 in Goodall 1986:379) found that chimpanzees who had been taken from their mothers during their first year were less able to concentrate on problem solving than were those

⁴¹ See for example Kaufman and Rosenblum 1969; Hinde and Spencer-Booth 1971; Hasegawa and Hiraiwa 1980.

⁴² Other studies describing nonhuman primate mother-offspring separation are Jensen 1968; Bowden and McKinney 1972; Suomi et al. 1975; McGinnis 1980; Codner and Nadler 1984.

who had had a normal mother-infant relationship.

Reite's (1979 in Goodall 1986:101) study of laboratory rhesus macaque and pigtail monkey infants separated from their mothers showed infants with increased activity and a type of behavioral depression. Symptoms included a typical "sad" facial expression, a huddled posture, withdrawal from activities such as play, listlessness and somewhat impaired coordination. Normally, most recovered from these symptoms within a few weeks but some died from untraceable causes. Monitored pigtailed monkey infants implanted with biotelemetry systems showed notable physiological alterations in body temperature and in heart rate and rhythm even though they were immediately adopted by an adequate childless mother.

One study of this kind was completed by Bloosmith, Marhalski and Gregor (1988) who wanted to measure the levels of "protest" and "despair".⁴³ They separated three chimpanzee mothers, who were between the ages of 19 and 21, from their infants, who were between the ages of 21 and 23 months. The infants, who all had siblings between the ages of 5 and 6, had lived with their competent mothers continuously until that time. Data collected three weeks prior and after separation were analyzed by a non-parametric test to detect differences between pre and post separation behaviour. Eleven behavioral categories were measured; agonism, prosocial behavior, locomotion, inactivity, vocalization, abnormal and other behaviors. It was found that the infant chimpanzees displayed lower levels of play and spent more time in close proximity to their older offspring. Two mothers were not observed playing and one mother whimpered significantly immediately after separation. She also engaged in self-slapping and rocking but ceased all abnormal behavior one day later. According to Bloosmith, Marhalski and Gregor

⁴³ Here, I use the terms "protest" and despair" as defined by Bowlby (1960).

(1988), the chimpanzee mothers displayed little evidence of extended “protest” and “despair” but noted that familiar group members may have been a contributing factor and that the abnormal response from one of the females may justify further research analysis.

Several factors contribute to the “bonding” process of a primate mother and her offspring. Suckling, which obviously serves a nutritional purpose, also provides comfort for an infant chimpanzee. Jane Goodall (1967:300-302) noticed that the feeding frequency of a chimpanzee increased after the age of six months. This coincided with the period in which one infant chimpanzee, *Flint*, would wander off to explore and quickly hurry back to suckle before exploring once again. She noticed that when younger infants were frightened, insecure, or not in close enough proximity to the mother, they often returned to suckle their mother for security if only momentarily. Even older infants would hurry back to their mothers in order to suckle.

Another important chimpanzee maternal role involves the provision of transportation for her infant. During the first few days after birth, a mother will help her infant to cling to her for transportation. After several days, an infant will be able to cling to its mother's hair without any support from the mother. If a mother walks off, a slight touch on the infant's back from the mother will signal the infant to cling. This form of communication has also been documented in gorillas (Schaller 1963), baboons (DeVore 1963a) and rhesus macaques (Hinde, Rowell and Spencer-Booth 1964). Eventually, a chimpanzee mother will force her infant to revert to the dorsal position. A more independent infant will jump on its mother's back as a form of transportation but also for protection and support (Goodall 1967:294-295).

For maternal care to function efficiently, communication between a mother and her offspring must take place. There are a number of tactile, auditory and visual signs that make this

communication possible. For instance, during the first few months after birth, an infant primate may cling to its mother to elicit a desired behavior. Similarly, a chimpanzee infant may make a slight “hoo” or whimper sound to attract its mother’s attention. As an infant gets older and begins to move away from its mother, visual signals play an increasingly important role. Any facial or gestural expressions may elicit a mother’s response. However, signs are also used by a mother to communicate with her offspring. For example, a mother’s gesture of reaching toward her child is an obvious sign that she wants her infant to move closer to her (Goodall 1967:328-333).

Primate maternal protection extends over the whole period of infancy and has been observed in juvenile, adolescent and even adult chimpanzee offspring. A chimpanzee mother will protect her younger offspring from climatic conditions such as fierce rain or winds and falling debris with her body. She will also protect her infant from encounters with other individuals or predators until it is able to react appropriately (Goodall 1967: 308-311).

Chimpanzee mothers are very protective of their infants. In a 1991 study, Yoshida et al. found that during their first year, when a chimpanzee infant’s activity increased, mothers tried to control their infants and when mothers failed to stop their infants from leaving, the infants would not necessarily return. Nevertheless, infants remained in view of their mother and seemed to feel secure as long as they could see them. In most descriptions of chimpanzees and other primates in the wild, it has been noted that when a young infant becomes alarmed, it will return to the safety of its mother or cling more tightly if it is already near. This has also been documented with nonhuman primates who have been reared by humans (Bowlby 1969:196).

When data on food sharing among chimpanzees was first collected it was in the context

of sharing meat where males shared with females and others (Goodall 1968; Teleki 1973 in Zihlman 1993:37). Further observations proved that over half of the sharing occurrences happen between a mother and her offspring and that plant foods are also shared. According to one study, 86 percent of plant food sharing was between related chimpanzees and most items shared were those most difficult to process (McGrew 1975; Silk 1978 in Zihlman 1993:37). Kano (1982 in Zihlman 1993:37-8) found that, among chimpanzees, adult females were donors four times more often than adult males. The high frequency of females donors to younger offspring and to other females suggests sociability among adult females.

Grooming, which serves as a bonding mechanism, provides essential biological benefits and plays a very important role in chimpanzee social spheres. Grooming is used as a measure of reciprocity among chimpanzees because it requires little energetic expenditure and is a safe way of making physical contact with others. As physical contact is an important component of bonding, a mother's grooming of an infant can be perceived as a means of attachment. As mothers spend most of their independent time with their infant, grooming is mostly directed toward them (Albrecht and Dunnett 1971:43).

Another important role of the female primate is that of a teacher.⁴⁴ In early studies of captive chimpanzees, Yerkes and Tomilin (1935:333-334 in Maestripieri 1995:366) observed that "sooner or later every mother encourages and variously aids her baby to learn to creep, stand erect, climb, and finally to walk and run"... "each mother has her own preferred instructional and pedagogical methods". Chimpanzee mothers have been observed teaching their offspring to

⁴⁴ Animal teaching, even among primates is a controversial issue. I would argue that female anthropoid apes teach their young. For a further discussion see Maestripieri, Dario, "Maternal Encouragement in Nonhuman Primates and the Question of Animal Teaching", *Human Nature*. 1995, 6(4):361-378.

collect specific grass stems and fashion them into tools for probing termites from a mound. They also show their young how to crack nuts with the use of a rock (Arnhart 1992:161).

Observations of maternal encouragement of motor skills have been made in macaques and baboons (Maestriperi 1995:364). Bolwig (1980:372 in Maestriperi 1995:364) observed that,

when an infant pigtail monkey is between 5 and 7 days old, the mother will put it down for the first time. She then takes a few steps backwards and lowers her front quarters. Facing the infant, she presses the back of her head down between her shoulders, pouts her lips, and raises her eyebrows. The impression the observer gets is that she is trying to entice the infant to walk toward her.

Jeanne Altmann (1980:130 in Maestriperi 1995:365) describes an incident of animal teaching where,

a [baboon] mother began to take a few steps away from her infant, paused, and looked back at the infant. As soon as the infant began to move toward her, she again moved slowly away. At first this sequence was repeated every few steps, but soon a mother seemed to be able to initiate a long bout of following by just one such pause

When maternal traits are discussed, they are usually spoken of generically, however individuality must be taken into consideration. Goodall (1990:33) says that most female chimpanzees are generally good mothers, however, some have proven otherwise. Some of Goodall's most important findings concerning mother-infant bonding derive from *Passion* and *Pom*. "[*Passion*] was a cold mother, intolerant and brusque, and she seldom played with her infant, particularly during the first two years" (Goodall 1990:33). As a consequence, her daughter (*Pom*) had difficulties throughout her lifetime.

On the first day of her life, *Pom* was laid onto the earth and touched by two females

without any hesitation from her mother *Passion*. Within the first two months *Pom* was forced to ride her mother dorsally. This was much earlier than any other infants. And when *Pom* whimpered and nuzzled to feed, *Passion* paid no attention to her hungry child. (Goodall 1971a:148-149). Probably for these reasons, *Pom* became noticeably more depressed than other children during weaning.

As *Pom* became older, effects of her upbringing became apparent. She paid little attention to her younger sibling *Prof*. This was very unusual for a young female. When at the age of ten, *Pom* became sexually attractive to older males, she would crouch before them, tense and nervous and when the moment of copulation was over she would run away screaming. Also, when *Pom* bore her first offspring *Pan* at the age of thirteen she had difficulty cradling him. Her infant would often slip off her as they sat in the trees and it would take *Pom* a few moments before retrieving him. On one such occasion, *Pan* was whisked away by rough winds to his death as he ventured away from his mother (Goodall 1971b).

Some feminists would suppress the importance of the female primate maternal role. This is due to the fact that “traditional” perspectives on female behavior have perpetuated and limited females’ importance to this role. It is to be noted that, although the maternal role is in my opinion the most important, demanding, and complex, nonhumyn female primates contribute to their societies in several other important ways. These contributions will be discussed in the following sections.

ii Matrifocal units

As discussed previously, early nonhumyn primate studies concluded that primate social

structure depends on the male dominance structure,⁴⁵ but as long-term research was conducted the importance of the relationship between a mother and her offspring was established. In her ground-breaking article “In Praise of the Achieving Female Monkey”, Lancaster (1973:30;32) noted the existence of a matrifocal social structure consisting of a mother and her offspring, whether the latter be female or male, and where fathers were not included. A matrifocal unit may include three or four generations and consist of both males and females. These large units often form the social core of the troop. According to Reed (1978:23), it is within this unit or core that cooperation can be found.

Lancaster (1973:34) notes that “both field and captive studies suggest that it is the matrifocal core that provides a primate group with stability and continuity” because in almost all known nonhuman primate societies the promiscuity of the males involved makes paternity undeterminable. Males are said to be much more transient and wandering as they begin to roam at puberty. Thus, a mother and her offspring form a “stable unit” and a “central core” within a primate troop. However, Lancaster (1973:34) notes that “females also change groups on occasion, but their migrations are infrequent”.

In her longitudinal study of chimpanzees at the Gombe Stream reserve, Jane Goodall (1971b:115) observed that “[o]nly a mother with her infant, and sometimes her young juvenile offspring, forms a stable unit over a number of years”. Contrary to previous assumptions, it is the matrifocal unit and not a male-female unit which forms the basis of a primate troop. According to Reed (1978:29), sexuality contributes very little to the cohesion of the group. Segregation of the sexes is far more common than brief pairings which occur only when a

⁴⁵ For example see Tiger (1970,1971), Tiger and Fox (1971).

female is in estrus. In fact, many female primates will come into estrus only every four to five years if they bear viable offspring. Shirley Strum (1977:39 in Reed 1978:30) notes that “female baboons spend more than 90 percent of their lives sexually nonreceptive, and it’s not much less for males. It’s very different from the human preoccupation with sex”.

Among many prosimian primates, who first appeared 70 million years ago, males remain apart from matrifocal units, only briefly joining females which are sexually receptive (Eisenberg 1981 in Silk 1993:212). Adult males may join the mother-offspring unit for a brief period of time until the young is somewhat independent but generally adult male and female prosimians live independently for most of their lives (Bearder 1987 in Silk 1993:213). Among anthropoid primates, who diverged from their prosimian relatives almost 35 million years ago (Sarich and Cronin 1976 in Silk 1993:213), adult males remain in proximity to female-offspring units for prolonged periods of time (Jolly 1985 in Silk 1993:213). However, anthropoid primate social organizations are diverse consisting of monogamous, polygynous, polyandrous, multi-male multi-female, endogamous and exogamous units (Jolly 1985; Terborgh and Goldizen 1985 in Silk 1993:213). Thus, Silk (1993:213) states the obvious,

[w]hile we have established that both ecological and taxonomic affinities may shape social structure (Clutton-Brock and Harvey 1977), the precise determinants of social organization have proven elusive.

Lancaster (1973:34) agrees that “among wild groups, the rate of male group-change varies, but in at least three land-dwellers -vervets, rhesus and olive baboons -it is known to be high and the rate is probably higher in arboreal groups”. For example, in a 13 month long study, J.S. Gartlan observed only one male out of six to stay with his study group. This was surprising to Gartlan because, as vervet monkeys are territorial, he had expected males to defend their area.

In fact, on many occasions, Gartlan observed males vigorously defending new territories against the comrades they had separated from only a few days prior.

In reality, because each individual territorial or semi-territorial primate group is attached to a specific home range, even though individual members are not tied to this territory, it is the much less transient females who hold the troop's valuable knowledge about range resources. (Lancaster 1973:34).

iii Female or family coalitions

Female and family coalitions have been observed in nonhumyn primate societies and are an important component of female social organization. Barbara Smuts (1992 in Arnhart 1992:168) noted that females may join forces against male encounters. G.Gray Eaton (1976:102 in Reed 1978:32) writes that adult female Japanese macaques

form alliances with one another, a kind of behavior that is rarely observed in unrelated males...If a male fights with a female, other females will usually come to her aid whereas males rarely assist one another...Female alliances therefore appear to be more important in regulating the cohesiveness of the macaque social order than sexual attraction between males and females...

Lancaster (1973:34) also noted occasions where adult female vervets, langurs, patas and geladas, "banded" together against males during aggressive encounters, especially when their children were threatened or when males would not share precious food. Also very vulnerable were males who had recently joined and had not yet established their rank within the group. Nonetheless, these encounters did not seem to affect the rank of the attacked males. However, Lancaster (1973:35) observed that after such coalitions, males were "careful" about their behaviours around the infants and juveniles. In several instances, she observed that all the males

scattered after a juvenile who was in their vicinity screamed for its mother. Concerning langurs,

Phyllis Jay (1963:121) wrote

on six occasions adult males were the object of female alliances. The females rushed at the offending male who may have inadvertently frightened an infant. Generally the male made no attempt to threaten the females but instead ran a short distance..

According to Pusey and Packer (1987 in Silk 1993:215-16) the relative difference in size between females and males also determines the effectiveness of female coalitions against males. When males are relatively larger than females and have much larger canines, such as baboons and gorillas, female coalitions are rarely seen. But according to Smuts (1987 in Zihlman 1993:41) female baboons may be aggressive and join forces against males. She notes that these attacks are prevalent in the context of protecting an infant, expelling a strange male from a group or protecting another adult female who is being attacked by a male.

In "Life with the Pumphouse Gang" (1975), Shirley Strum writes, "I observed only two types of baboon friendships, those between females and those between males and females. Females may form "friendships" with males to protect them against other males. Smuts (1992 in Arnhart 1992:168) suggests that social strategies for relationships depend on both social and ecological circumstances.

Family coalitions were observed by Goodall (1967:311) who noted that mothers sometimes protected or went to the assistance of older offspring. *Fifi*, as a juvenile, would sometimes threaten other females and adolescent males but rushed to her mother's side for security and protection. When her mother *Flo* was not nearby, *Fifi* was not observed threatening others. *Flo* was also observed protecting *Figan*, her adolescent son, by threatening and chasing

his older male aggressor. *Olly*, another mother was not seen chasing but directed large threatening barks toward her son's aggressor. Similar protective behavior of older offspring has also been observed in rhesus monkeys (Sade 1965 in Goodall 1967:311).

iv Divisions of labour

When predation and hunting were first observed and reported among wild chimpanzees of the Gombe Stream Reserve in Tanzania, it was noted that males seemed to be the only contributors. Between 1960 and 1968, Teleki (1973 in Zihlman 1993:35) observed 58 occurrences of hunting in which males were the sole participants. However, Nishida, Uehara and Nyundo (1979 in Zihlman 1993:35) observed predation behavior in the Mahale Mountains chimpanzees which differed according to sex, technique and prey. Predation, in this population, tended to be more solitary with females involved in about one third of the episodes. It was noted, however, that females mostly captured smaller prey such as ungulates whereas males most often hunted small monkeys (Nishida, Uehara and Nyundo 1979, Nishida and Uehara 1983 and Goodall 1986; in Zihlman 1993:35) Chimpanzees in the Tai Forest, Ivory Coast, also differed in that they most always preyed upon monkeys, their hunts lasted longer and were rarely solitary, adolescents of both sexes hunted, and females took part in 13 percent of the hunting activity (Boesch and Boesch 1989 in Zihlman 1993:35).

Social, travel and foraging patterns of individual chimpanzees influence differences in the frequency of predation. According to Goodall (1986 in Zihlman 1993:36), when in estrus, female chimpanzees join a group of males or other females in estrus. Otherwise, adult females usually forage with their offspring, siblings or mother. On the other hand, males move in social

groups where they actively seek a position within the male dominance hierarchy. Since a number of predatory instances involve more than one individual, it is more likely for males to participate in this social activity since they are more often in social groups. When females were observed in predatory behavior, Goodall (1986:306 in Zihlman 1993:36) claims that it was “in the context of mixed-party hunts”. If her observations and conclusions are accurate, then females within chimpanzee groups are less gregarious than males.

In her book Mothers and Infant Baboons, Jeanne Altmann (1980) emphasized an enduring conflict between adult females’ productive and reproductive lives. As Ward (1996:96) puts it, “their work [is] a constant trade-off between maternal care or child rearing and the time and energy needed to forage food”. Hrdy (1981) also asserts that females are productively strategic. She notes that limited food resources is inherent to female sexual politics. For example, the Gombe Stream females spend a large amount of time gathering food. McGrew (1979, 1981 in Zihlman 1993:36) observed females seeking termites more frequently and spending more time at the termite mounds than males. Mahale female chimpanzees were also observed to feed more frequently than males on insects. (Uehara 1986 in Zihlman 1993:36). Derived from a sociobiological perspective, Zihlman (1993:36) claims that the difference in termiting behavior may be due to the minimal expenditure of energy which is necessary because female chimpanzees spend most of their adult life pregnant, lactating or rearing offspring.

Another so called “gathering” activity which has been observed to be most efficient for female chimpanzees is nut cracking. Efficiency of nut cracking is measured both in terms of hits per nut and nuts processed per minute. Boesch and Boesch (1981, 1984) explain this efficiency on energetics, where females rely on the high nutritional value of nuts and social behavior.

Males, on the other hand, rely on visual contact with other males and therefore repeatedly interrupt their cracking behavior.

“Studies on free-ranging chimpanzees reveal that females and males may differ in ranging patterns, tool using, food sharing, predation and dietary composition” (Zihlman 1993: 34).⁴⁶ Consequently, some researchers have suggested that the gender division of labour of early homyn ancestors is reflective of their ape ancestors.⁴⁷ Hence, termite fishing by female chimpanzees and small animal hunting by male chimpanzees may have resulted in the gathering abilities of hominid females and hunting abilities of hominid males (Zihlman 1993:34). The lack of archaeological evidence supporting a division of labour among early hominids casts doubt on this assumption but also lends itself to the evidence of a division labour among chimpanzees (Zihlman 1993: 35).

v Sexual Dimorphism

Some functionalists have considered sexual dimorphic traits to be the outcome of sexual or natural selection and have attempted to identify the selective pressure which may have caused such dimorphism. However, they have failed to explain the mechanism of development and the great variety of expression. Fedigan (1982 in Haraway 1989:341) warns that sex differences in behaviour cannot be deduced from degrees of sexual dimorphism. For instance, it has been claimed that the more a species is sexually dimorphic the more its society will be polygamous. On the other hand, species which show little sign of sexual dimorphism, ie. humyns, will tend to

⁴⁶ For more information see McGrew 1979; Boesch and Boesch 1981, 1984, 1989; Wrangham and Smuts 1980; Nishida, Uhara and Nyundo 1979; Goodall 1986; Uehara 1986.

⁴⁷ For example see McGrew 1979; Galdika and Teleki 1981.

be monogamous. As Haraway (1989:341) notes,

[b]ut variability among primate species makes what seem like analogous patterns granulate into fragments, whose meaning can only be recovered from an analysis of the whole range of life history parameters, ecological variables, and evolutionary relationships.

One traditional perception which explains sexual dimorphism is that male primates protect and defend their “family” or “group”. Reed (1978:24) argues that it is incorrect to view males as protectors or defenders because all animals defend themselves by fight or flight. Females will protect and defend their young but prefer to flee while males will often fight but do so to protect themselves and not their “families” or group. Reed (1978:25) envisions the perceptions of “defenders” as anthropomorphic, stating that “[o]nly humans can organize guards, soldiers, and other defense bodies which are found in social life”.

As gorillas are highly sexually dimorphic, it was assumed that males would show high levels of aggression and competition (Schaller 1963). Dian Fossey’s (1983) work dispelled myths about the violent and aggressive nature of the gorilla. In fact, Fossey found that all gorillas are particularly docile and non-aggressive until provoked.

vi Dominance

Dominance relationships between males and females have been associated with the morphological difference between the sexes such as sexual dimorphism and reproductive strategies (Smuts 1987 in Silk 1993:215). What various researchers have meant by *dominance* is a very complex issue. Generally, the term has been used to refer to situations where one sex (invariably males) or individuals within a group (i.e. older versus younger males) have

proportionately greater access to various resources such as sexually receptive females or food.

Dominance is determined and maintained through successful competitive encounters. As

Fedigan (1982:93) notes, dominance is expressed through

... “priority of access to incentives,” which means having precedence over others using desired resources such as food, water, space, sexual partners and other social companions. If desired objects are limited and not everyone can use them at the same time, those who have first access to them are said to be dominant.

Fedigan (1982:93) also notes that

... scientific definitions refer to dominance as special forms of power which are established through conflict and self-assertion or potential for “aggression”. Likewise dominance is *measured* through studying the outcome of conflicts and/or the patterns of avoidance or conflict.

Dominance has been associated with sexual dimorphism. For example, some female lemurs, who are morphologically larger than their male counterparts, are considered to be the dominant members of their groups regarding access to such resources as food (Richard 1987 in Silk 1993:215). However, this is not the norm. Most prosimians show little signs of sexual dimorphism nor do they exhibit consistent aggressive patterns related to sex. Among anthropoid primates, however, most males are consistently morphologically larger than females and are thus said to show signs of dominance.

The extent of sexual dimorphism is associated with the social organization of the anthropoid primate group. Consequently, according to Silk (1993:220), a group of primates, which consists of several females and only a small number of males, will show signs of greater sexual dimorphism because males will have to compete for females.

As one measure of dominance is access to sexually receptive females, it was assumed that males within highly sexually dimorphic groups acquired “harems”. Reed (1978:27) argues

that the “harem” theory of male dominance is based only on the fact that females often outnumber males in a group. In fact, Carpenter (1963:44-45 in Reed 1978:29) argues that a female primate in estrus is more sexually vigorous than an interested male. A female does not restrict her mating to the most “dominant” male but mates with several males within the group regardless of their social rank. As Reed (1978:29) notes, “[m]ost reports tell of males quietly awaiting their turn at access to the female”.

Galdikas observed that, although sexually dimorphic, adult orangutans are not demonstrative and are most often solitary. Male orangutans maintain a dominance hierarchy for years without often interacting. Dominance is maintained by recognizing each others’ calls. Galdikas attributes this lack of aggression to the fact that orangutans are solitary animals and therefore do not need or depend on each other (http://www.lpzoo.com/ark/orang_article.html).

Dominance of males has also been attributed to females’ reproduction investment. As nonhuman female primates spend most of their adult lives in estrus, lactating, or rearing offspring, it was assumed that females played no other role within primate society, especially in the determination of the hierarchical social structure. Males, on the other hand, were assumed to gravitate in the political sphere in an everlasting conquest to gain social status or dominance. Later studies, suggested that the matrifocal units within a troop were ranked and had an influence on individual rank of males. For example, the rank of a male’s mother can play a role in determining his status (Zihlman 1993:39). In Goodall’s (1989) research on chimpanzees at the Gombe Stream Reserve in Tanzania, *Flo*, the highest ranking female in the troop, bore very successful offspring, including *Figan*, who became alpha male for about eight years. *Flo*’s other offspring also ranked well within the troop, including her daughter *Fifi*, who became a dominant

female within the troop.

The prevalence and frequency of dominance interactions varies among primates species. For example, female gorillas exhibit so few dominant encounters with other females that they cannot be determined within a hierarchy (Fossey 1983)(Watts 1985:215). But in many primate species, males seem to physically dominate over the females. This does not imply however, that all males dominate all females. For example, in Goodall's (1971b) study of chimpanzees at the Gombe stream reserve, *Flo* was an old and feisty female who was not afraid of threatening and chasing younger male aggressors who threatened her offsprings. From these encounters, *Flo*'s young learned the behavior and attitudes specific to the different members of the group and the latter understood that *Flo*'s little offspring were protected by a powerful and aggressive mother (1971b;1989). *Flo*, who was considered by researchers to be the alpha female, showed signs of domination over members of her own sex as well. "Flo was exceptionally aggressive toward her own sex, and she would tolerate no insubordination from young adolescent males" (Goodall 1971b:124).

In Strum's (1993 in Ward 1996:99) long-term study of baboons in Kenya, *Peggy*'s strong character was sufficient to deter others from conflicting with members of her matriline. Even males who were larger and stronger gave *Peggy* what she desired whether it was a shady spot, a bit of food or even grooming. Strum (1993 in Ward 1996:98) also revealed a social structure where males partook in caretaking friendships with younger baboons and did not routinely monopolize females and where females often chose lesser-ranking males to groom and befriend.

Silk (1993:214) attests that aggressive and competitive interactions are often highly correlated. Specifically, if A is dominant over B in an aggressive encounter, then A can most

likely displace B from resources. Several correlations between dominance and access to resources such as food (Fairbanks 1984; Whitten 1983), water (Wrangham 1981), receptive females (Fedigan 1983; Gray 1985; Silk 1987), and grooming partners (Seyfarth 1977, 1980) have been found. On the other hand, dominance rank is not always a predictor of the distribution of resources. If A is dominant over B, A might not necessarily challenge B for resources since A might not attribute the same value to those resources (Silk 1993:214). Also, males constantly struggle to maintain rank, however females maintain stable ranking for long periods. Changes in the ranking of a matrifocal unit only occur with disease, death or some other devastating anomaly (Lancaster 1973:36).

There is a tendency among researchers to imply or assume that females are much less aggressive than male primates. This assumption can be based on the fact that many researchers focus their research on aggression that results in direct physical contact or injury. In fact, most aggressive acts do not have these results, although potential for injury is higher among primates who exhibit a high degree of sexual dimorphism such as gorillas and baboons. (Zihlman 1993:40).

Smuts (1987 in Zihlman 1993:40) challenges the assumption that males are always more aggressive than females and that females are necessarily passive. In fact, in day-to-day situations there may be little difference between females and males in overall frequency of aggressive behavior. Also, females may be more aggressive to each other than previously thought. In her study of females baboons, Smuts (1985 in Zihlman 1993:41) found that females attacked other females five times more often than males attacked females, but serious injuries were rarely inflicted. As a result, rates of aggression and infliction of injuries do not correlate and must be

treated separately.

Problematic to Haraway (1989:323) is

[w]hat really constitutes a biologically meaningful measure of dominance, i.e., whether dominance hierarchies (rather than interactions) are artifacts introduced by the observers or insisted upon by the animal, easy to see, very hard to see, impossible to miss but not very important to much else, or subtle but critical to everything.

I would agree with Fedigan (1983:113) who states that

...our thinking about [dominance] has not done justice to the complexities of social power and the manner in which it operates in primate societies.

II Conclusions

As a comparative field of study primatology has attempted to determine the role of nonhumyn female primates in order to understand better the role of humyn female primates within evolution society. In the past, studies of nonhumyn female primates have been used to perpetuate an androcentric perception of humyn females. Analysis of gender differences and hierarchy among primates tended to focus on sexual dimorphism and female reproductive strategies. Now, research has discovered that the role or behaviours of nonhumyn female primates was not as previously assumed.

Behavior does not have simple correlates. According to Boesch and Boesch (1989, 1990 in Zihlman 1993:35), chimpanzee behavior might form part of a larger picture which depends on a wide variability within social patterns among community members regarding ranging patterns, among differing chimpanzee groups regarding tool creation and predation and, among individual chimpanzees regarding particular personalities and energetic requirements. Hence, chimpanzee

behavior is more complex than previously thought and it is likely that early hominids were equally complex. In her study of baboons, Strum (1987 in Ward 1996:100) settled on the idea of “complementary equality” where females and males had different jobs but both were involved in politics, peacekeeping and caregiving. They practiced reciprocity where friendship and social ties were as important and kinship ties.

This chapter has discussed how a feminist perspective to primate studies has transformed “traditional” views of nonhumyn females specifically regarding nonhumyn primate mother-offspring relationships, matrifocal units, female or family coalitions, divisions of labour, sexual dimorphism, and dominance. Female centered research has shown that the outcomes of social interactions are based on kinship, social networks and individual variations in social skills and intelligence (Zihlman 1993:41). Therefore, since the role or contribution of nonhumyn female primates is not as previously assumed and since primate social behavior has and is being used to provide clues to early humyn behavior, then perhaps interpretations of humyn females should also be reassessed.

Conclusions

In this thesis I have considered the different ways that female primatologists have dispelled myths about nonhumyn primate behavior. The wimmin discussed have shown that nonhumyn female primates play complex roles within their society. Rather than “traditional” notions of passive female nonhumyn primates, this thesis has argued that females are assertive, competitive, productive and important components of their society.

In Chapter one, I provided a summary of some androcentric views within three “traditional” theoretic perspectives and some problems in methodology concerning primate studies in order to set the tone for the changes made by feminist researchers. Chapter two stated the case for a more female focused approach to primate studies which I call “feminist primatology”. The third chapter discussed the contributions of several female scholars to primatology. The last chapter indicated how “feminist primatology” has transformed views of female primates, specifically regarding our understanding of female nonhumyn primate mother-offspring relationships, matrifocal units, female of family coalitions, division of labour, sexual dimorphism and dominance. Finally, this conclusion will indicate gaps in my research and in feminist primatology while indicating a direction for future research.

At this point I wish to acknowledge the gaps within my research. Like most who set out to write a paper, I had a grandiose vision of my goal and task. While conducting my research, I found many issues concerning nonhumyn primates on which I wished to elaborate, but because of limitations I had to confine my research within set limits. For instance, each female primatologist profiled in chapter three, as well as others, deserves an extensive biography.

Nonetheless, I tried to focus upon these females' most prominent achievements.

I have also observed gaps in the feminist research of primatology. An important characteristic of primatology as a comparative approach is that it simultaneously focuses upon similarities and differences among many different species. Comparisons can be made at any level and from various positions. As primatology is a holistic discipline which deals with all facets of primates, primatology sometimes lacks cohesive arguments. For instance, Sarah Blaffer Hrdy argues for a sociobiological primatology while Linda Marie Fedigan holds a structural-functional position. This adds to the lack of credibility attributed to primatology since researchers within the discipline itself are sometimes at odds.

Also, because the primate order consists of so many species, several different conclusions concerning similar topics of research have been reached. For instance, within baboon society, aggression between males is rarely observed. It has been argued that competition can thus be managed without physical contact. On the other hand, chimpanzee males show many signs of aggression. This is a normal part of their struggle for a position within a hierarchy. It is thus difficult to reveal commonalities about aggression in primate societies. According to Sperling (1991:205)

...many aspects of morphology and behavior cannot be explained only as direct results of natural selection. Researchers must begin to examine the multiple contingent pathways along which extra-organismic factors interact with organisms at every stage of development . Emphasis on contingency in the development of biological and behavioral systems leads inevitably away from the biological essentialism (the belief that gendered behaviors are genetically determined) so persuasive in functionalist evolutionary models in primatology.

It is my argument that genes or functionalist adaptive strategies are not the only determining factor of behavior. Behavior within primates is determined by biological, social and

ecological factors. Thus, primates not only go through biological evolution but social as well. “Simpler” societies such as those of nonhumyn primates have somewhat more structured roles, although these roles are by no means asymmetrical or static. As industrial and technological components evolve, humyns need not adhere to perceived “traditional” ideological roles such as “man the provider” and “womyn the nurturer” since our evolving society permits flexibility.

As “feminist primatology” is a new concept or direction within primate studies, female researchers within the discipline might scoff at such a title. Androcentric perspectives on primate behavior still exist and serve important agendas. Although a common goal of dispelling androcentric perspectives of primate behavior is apparent among the researchers and research discussed in this paper, cohesiveness among methodologies and conclusions are limited. It is thus important for wimmin primatologists to address feminist issues and acknowledge them as such since they derive from a female agency and agenda. A female perspective provides a more balanced description of primate social life.

An ever changing society and women's roles therein bring shifts in values requiring alternative methods of adapting to different situations. We must be mindful however of underlying presumptions and cultural constructs that affect our observations as researchers. Attention must be paid to differences between actual, expected and idealized behaviours. As humyns, we are capable of researching, studying, perpetuating and manipulating knowledge. What I have argued in this thesis is that the study of nonhumyn primates can help unveil unsupported cultural and perceptual presumptions about the nature of social behavior, whether it be the behaviour of nonhumyn or humyn primates.

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Websites

<http://www.science.ca/css/gcs/scientists/Galdikas/galdikas.html>

Biruté Galdikas

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Biruté Galdikas

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<http://www.ns.net/orangutan/president.html>

Biruté Galdikas

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<http://www.wcsu.ctstateu.edu/cyberchimp/homepage.html>

Jane Goodall

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<http://night.primat.wisc.edu/pin/goodall.txt>

Jane Goodall

American Scientist, November-December 1995

<http://www.usc.edu/dept/elab/anth/goodall.html>

Jane Goodall

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Jane Goodall

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Jane Goodall

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Jane Goodall

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<http://biosci.cbs.umn.edu/chimp/jgstory.htm>

Jane Goodall

The Jane Goodall Center for Primate Studies, University of Minnesota

<http://zzyx.ucsc.edu/~jjosj/zihlman.html>

Adrienne Zihlman

<http://larch.ukc.ac.uk:2001/home/gorillas/background/fossey.html>

Dian Fossey

<http://www2.uchicago.edu/bsd-ev-bio/altj.htm>

Jeanne Altmann

Jeanne Altmann Homepage

<http://halley.pepperdine.edu/studios/ed655/kwlepore/anthro.html>

Sue Savage-Rumbaugh

anthro.html

http://cug.concordia.ca/~scol/publect/ssav_lec.html

Sue Savage-Rumbaugh

Paper Presented Thursday November 17th 1988 by Dr. Sue Savage-Rumbaugh, Product of the students of the Science College, Concordia University, Montréal, Canada.

<http://gpu.srv.ualberta.ca/~lfedigan/fedigan.htm>.

Linda Marie Fedigan

Linda Fedigan's Home Page, 1997.

Appendix 1

On the Spelling of Womyn, Wimmin and Humyn

In 1991, The Random House Webster's College Dictionary (RHWCD) entered into their text the word *womyn* as an alternative spelling to the word *women*. The dictionary was censured and hailed as a "politically correct" text with such feminist inclusions as *herstory*, *waitron* and *womyn* (Steinmetz 1995: 430).

Other lexicographers omitted the word *womyn*. As Anne Soukhanov, the executive editor of the American Heritage Dictionary of the English Language (1992) explained

[space is a major constraint in entering new words into a dictionary, so AHD editors relied heavily on electronic citations when deciding which ones to include. One word that did not past muster was *womyn*. The evidence showed that it is used chiefly in the literature of women's issues, and that when it does occur in general sources, more often than not it is enclosed in "shudder quotes" or briefly glossed, often in a jocular manner. The use of such quotation marks and glosses is a standard warning to editors that the word in question has not yet gained widespread currency (Soukhanov 1993:6).

In "Womyn: The Evidence", Steinmetz (1995:429-437) questioned the grounds on which the Random House editors made the decision to enter *womyn* into their dictionary. The following citations cover the years between 1976-1994. Since RHWCD was published in 1991, citations after this date have been added to complete the record. I am certain that many citations after 1994 exists however my sources are limited to 1994.

Dearest Womyn..... ["Announcements", Lesbian Connection Sept. 1976:24]

Dyke: A Quarterly....For Womyn Only. [Dyke Fall 1976:cover]

We are womyn run, womyn built...we are womyn together without benefit of

electricity. [”Sister: Take This quiz”, Lesbian Connection Dec. 1976:7]

I would like to hear from womyn about monogamy. [”Letters”, Lesbian Connection Apr.1977:4]

Build strong womyn’s institutions that will survive this wave. [harriet and catherine, “Notes for a Magazine”, Sinister Wisdom Fall 1977:80]

My womankind tells me that she will give birth to a womunchild [sic]. [Daughter visions (Lammas issue) 1981:4]

The 10th annual Womyn’s Weekgot under way Monday at San Jose State University. [United Press International, 7 Mar.1983]

The planned retrial has sparked criticism from Stop Abuse of Womyn, a group formed last year. [United Press International, 20 Feb. 1984]

Sponsored by the Womyn’s Information Consortium and Communication Arsenal, the hex enlisted chants, songs and some witchery against “men who commit violence”. [United Press International, 14 July 1984]

Ladies against Women: Nightwood Theatre and Womynly Way present the San Francisco-based Plutonium Players in a spoof on sex roles, social rules and human rights of the “ruling right wing.” [”The Diary”, Globe and Mail 17 May 1985:M2]

I was in Berkeley protesting against apartheid South Africa.....and I found the “Womyn’s Caucus” up there. (Because it is) a group of feminists, I immediately deduced that womyn is the feminist term for female - plural. I don’t know what the singular would be - perhaps womin...

The feminist word I don’t like is herstory for history. [Tracy Cummings, “Jack Smith gets Letters and Will Soldier on as Chairman against the Emasculation of Job Titles”, Los Angeles Times 9 July 1985:pt.5,1]

Womyn’s Braille Press: Started in the early 1980s by Edwina Franchild and others who felt that national U.S. organizations for the blind has little sensitivity to feminist and lesbian interests and concerns. [Cheris Kramarae and Paula A. Treichler, A Feminist Dictionary, Boston: Pandora, 1985]

Local musicians performed as did Peace City’s Collective Vision and Wild Womyn for Peace, and its comedy group, Bits and Pieces. [Kathleen Hendrix, “Great Peace march, Peace Cruise Cross Paths”, Los Angeles Times 1 Aug. 1986:pt.5,1]

Men are not allowed in the Mountain Moving Coffee House for Womyn & Children, and neither are male children over 10. [Barbara Brotman, "Dictionary for 'womyn' Says Half of Society is a Dirty 3-Letter Word", Chicago Tribune 23 Oct. 1986:sec.2,1]

....always tell the haters by their spelling deficiencies. First, we had 'Amerika,' a product of the unconscious fascism of the New Left. Now we have "womyn", who can't bear to spell "men".

Thanks, "womyn", for adding to the distinction between the counterfeit and the genuine article, but there's no need to force the point. The difference between "womyn" and women goes without spelling. [Jeff Greendale, "Spelling it out?", letter to the editor, Chicago Tribune 5 Nov. 1986:sec. 1,22]

But while womyn do not oppress men, they do them an injustice with their words and actions. They ignore those among us who are feminists.... I am Hispanic and I have been called that [wetback] and other things. I resent it. And though I respect the rights of womyn to their privacy and their opinions, I resent being called a "boy". [Julio Ojada, "Anti-Male?", letter to the editor, Chicago Tribune 7 Nov. 1986: sec.1, 28]

County police...join the students in demanding that the [state] university [at Stony Brook] tighten security. Student groups such as the Womyn's Center have tried to make the administration aware that a security problem exists. [Newsday 29 Feb. 1988: 3]

At Dartmouth, home of the flagship conservative-movement paper The Dartmouth Review and also a bastion of sexism, the Womyn's Re/view faces a constant battle. [Wende Marshall, et al., "Radical Rap: Tales out of School", The Nation, 26 Mar. 1988: 20]

The Wisconsin Division of Health issued an alert Friday regarding an outbreak of diarrhea among persons who attended the Michigan Womyn's Music Festival held near Hart Aug. 9-15. [United Press International, 19 Aug. 1988]

"Me and Mrs. Middle America" would have been irritatingly hip if it hadn't been on the same set as the positively blasphemous "Womyn with a 'Why' (Womyn)", which zapped biblical figures and urban feminist types with equal glee. [Alona Wartofsky, "Uncle Bonsai", The Washington Post 9 Feb. 1989:C8]

...Esther Lastique, a member of the executive board of the Center for Womyn's Concerns. [Newsday 5 Apr. 1989:8]

At about 3:15 p.m. Franklin, representing the Evergreen Alliance, unlocked the

handcuffs that attached him to a wall lamp and Stephens, from Womyn Empowered Against Violence to the Environment (WEAVE), released the bicycle chain she used to bind her to a desk leg. [United Press International, 5 June 1989]

Another Feminist operating technique is the avoidance of the word “man” and “his”. Thus, women become “wimmin”, “womyn” and, most frequently “womben”. [Shanties, Shakespear, and Sex Kits: Confessions of a Dartmouth Review Editor”, The Heritage Foundation Policy Review Fall 1989]

Alternative spellings often have political functions; the spelling of *women* as *womyn* or *wimmin* is not merely a simpleminded desire to “rid the language of men” but rather a graphic representation of a separatist political stance. [Paula A. Treichler and Francine Wattman Frank, Guidelines for Nonsexist Usage, New York: MLA, 201]

I DO NOT recommend this humor at all. Feminists who cry sexism at “Little Mermaid” and “Pretty Woman”, and those womyn who do not take kindly to men opening doors for them, you have my warning. [Caitlin Creevy, “On the Defense for the Diceman”, Chicago Tribune 20 July 1990: sec.7, M]

An unknown group circulated Acker’s picture with a warning- “you may be next!” -to “all Dartmouth womyn” (purging the letter “men” from the word). Jerry Adler with Lauren Picker, “Advice and Consent at Dartmouth: A Student Protests Suspension for ‘Sexual Abuse’”, Newsweek 6 Aug. 1990:68]

...protesters with a sign that says REGARDLESS OF AGE, WE ARE WOMYN & WE DEMAND CHOICE! Can’t they spell women?... [Editor’s response:] Demonstration organizers say that the spelling *womyn* was used to omit the word *men*. [Alan M. Valente, “Spelling Women”, letter to the editor, Time 13 Aug. 1990: 6]

SPELLING LESSON-... They’re nicely paired for a show at the Barns of Wolf Trap, though it seems like these “womyn” are intent on making life difficult for copy editors. [Joe Brown, “From Cult Classics to ‘Superstars’”, The Washington Post 12 Oct. 1990: N20]

Beginning this semester, references to “women” have been discontinued in any of the Student Association’s writing [at the State University of New York at Albany]. Instead, females will be referred to by a new, improved nonsexist term: “womyn”. “A number of people feel it’s derogatory to women if you already have the word ‘men’ in there”, explained Central Council chairman Jeffrey Luke. The idea is to take the ‘men’ out of ‘women’... The Student Voice, along with any other [promotional material put out by the association, will refer to *women* as

womyn, Also, the students' women's issues coordinator has become the womyn's issue coordinator. ["It May Soon be a Womyn's World", Bergen [NJ] Record 29 Oct. 1990:A1]

It may be interesting to see what can be done with what used to be English -the Mother Tongue, as it was known before its speakers became gender-sensitive. Take today's version of the holiday story:

The Pilgrims, an indie pro-religion alternative society, spent most of their first year in America slowly starving on a diet of high-fiber roots... Since the Pilgrims were just as speciesist as the NatAms, [Myles] Standish gave four Iron Johns the unenviable task of going a-fowling, which would have been an even scuzzier job except that genderist Ps made the womyn job-share the giblet thing. [M. R. Montgomery, "Giving Thanks in a Nouveau World", The Boston Globe 28 Nov. 1991:1]

In this modern age of sexual fear and loathing, celebrate the creative, empowering - and, we may add, safe --side of sex by giving your sexual-revolutionary womynfriends a gift from Eve's garden (119 West 57th Street).[advertisement, Village Voice 24 Dec. 1991:53]

WOMYN A dissident form of a common noun for adult females of the species *Homo sapiens*. [Gerald Parshall, "Words to Watch", U.S. News & World Report 30 Dec. 1991:86]

a festival for womyn at a scenic, private camp near Oxford Pennsylvania.... Local and nationally recognized womyn spiritual leaders presenting *intensive, experiential workshops* reflecting the diversity of beliefs known as womyn's spirituality...Crafts area featuring spiritually-oriented womyn-made items.[Ladyslipper Catalog (mail order sales catalog), Durham, NC, 1991, 83]

No school has concocted guidelines quite as specific as Antioch College's.... Seventy percent of the student body are womyn (for the uninitiated, that's women --without the dreaded m-e-n). [Sarah Crichton et al., "Sexual Correctness: Has It Gone too Far ?", Newsweek 25 Oct. 1993:52]

wimyn. Alternate spelling of "womyn". Theresa-McCauley recommends that "wimyn" be used exclusively in the plural and that "womyn" be used only in the singular. [Henry beard and Christopher Cerf, The Official Politically Correct Dictionary and Handbook, New York: Villard, 1993, 79]

Microsoft's popular Word program helps sloppy writers avoid run-on sentences and passive verbs. Now Word comes to the help of those who fear being politically incorrect. Write the word *chairman*, and you're warned that it is

“gender specific” and that a “gender neutral” word like *chair* or *chairperson* should be used instead. *Wife*? Should be *spouse*.... But Word won’t satisfy the radical PC-ers. If you write *womyn* the Word spelling checker flags it as an error. [Damon Darlin, “Making PCs PC”, Forbes 6 June 1994: 20]

A typical addict’s day starts like this: “7:00 Wake up. Surprise and delight at finding myself in bed with me ! Affirmation : ‘I am a magnificent womynbeing. Everything about me is potent and powerful, including my morning breadth’”. Putting an end to self-empowerment addiction means not doing anything. [Newberg, “There’s New Hope for Disillusioned Self-Help Addicts”, The Arizona Republic 8 June 1994:D3]

Politically Correct Bedtime Stories by James Finn Garner (MacMillan, \$8.95). Fairy tales recast in PC terms” Little Red Rising Hood was asked, “to take a basket of fresh fruit and mineral water to her grandmother’s house- not because this was womyn’s work, mind you, but because the deed was generous and helped engender a feeling of community”, [”Beyond the Top 50: Humor”, USA Today 9 June 1994:4D]

I performed at a lesbian coffeehouse and received the stunned oxen look from all the women/womyn/chicks there. [Roseanne (Arnold), in a letter to a lesbian comedienne, quoted by John Lear, “Dealing with Roseanne”, The New Yorker 17 July 1995: 47]

These citations represent a fraction of the actual number of times *womyn* has appeared in print. Random House also noted records of about 250 short stories in which *womyn* is used. According to the above data, the statement by Soukhanov that *womyn* is “more often than not” enclosed in quotation marks or briefly glossed over is false. Similarly, the use of *womyn* in women’s literature certainly does not justify its exclusion from the dictionary (Steinmetz 1995:436).

Similarly, in 1989, the Oxford English Dictionary (OED) editors entered *wimmin* into their dictionary. The OED’s citations for *wimmin* originate as early as 1983 from sources such as The Observer, Sunday Times, The Listener, Private Eye and The Sunday Telegraph. According to Steinmetz (1995:437) records of the use of *wimmin* goes back to 1976 in the U.S. The

differences between the two terms is geographical whereas, British opt for *wimmin*, while American prefer *womyn*. The definitions are similar (Steinmetz 1995:437).

wimmin a semi-phonetic spelling of ‘women’, recently adopted by some feminists as a form not containing the ending *-men*. (OED)

womyn *n.pl.* women (used chiefly in feminist literature as an alternative spelling to avoid the suggestion of sexism perceived in the sequence *m-e-n*) (RHWCD)

I however, like others, suggest the use of the term *womyn* in lieu of the singular term *woman* and *wimmin* in lieu of the plural term *women* since no alternatives to *woman* are given.

Appendix 2

Jane Goodall Selected Publications:

- 1962 “Nest-Building Behavior in the Free Ranging Chimpanzee”, Annals of the New York Academy of Sciences. 102(2):455-67.
- 1963 “Feeding Behaviour of Wild Chimpanzees: A Preliminary Report”, Symposium of the Zoological Society of London. 10:39-48.
- 1963 “My Life Among the Wild Chimpanzees”, National Geographic. 124(2):272-308.
- 1965 “Chimpanzees of the Gombe Stream Reserve”, in Primate Behavior: Field Studies of Monkeys and Apes. DeVore, Irvén, ed., New York: Holt, Rinehart & Winston.
- 1965 “New Discoveries Among Africa’s Chimpanzees”, National Geographic. 127:802-31.
- 1967 “Mother-Offspring Relationships in Free-Ranging Chimpanzees”, in Primate Ethology. Morris, Desmond, ed., London: Weidenfeld and Nicholson.
- 1967 My Friends the Wild Chimpanzees. Washington, D.C.: National Geographic.
- 1968 “Expressive Movements and Communication in Free-Ranging Chimpanzees”, in Primates: Studies in Adaptation and Variability. Jay, Phyllis, ed., New York: Holt, Rinehart & Winston.
- 1968 “The Behavior of Free-Living Chimpanzees in the Gombe Stream Reserve”, Animal Behavior Monographs. 1:165-311.
- 1971 “Some Aspects of Mother-Infant Relationships in a Group of Wild Chimpanzees”, The Origins of Social Relations. London: Academic Press.
- 1971 In The Shadow of Man. Revised Edition. Boston: Houghton Mifflin Company.
- 1973 “Cultural Elements in a Chimpanzee Community”, in Precultural Primate Behaviour. vol. 1. Menzel, E.W., ed., Basel: Karger, Fourth IPC Symposium Proceedings.
- 1977 “Infant-Killing and Cannibalism in Free-Living Chimpanzees”, Folia Primatologica. 28:259-282. et al.

- 1979 "Intercommunity Interactions in the Chimpanzee Population of the Gombe National Park", in The Great Apes. Hamburg, David A. and Elizabeth McCown, eds., Menlo Park, CA: Benjamin Cummings.
- 1979 "Life and Death at Gombe", National Geographic. 155:592-621.
- 1984 "The Nature of the Mother-Child Bond and the Influence of the Family on the Social Development of Free-Living Chimpanzees", in The Growing Child in Family and Society. Kobayashi, N. and T. Berry Brazelton, eds. Tokyo; University of Tokyo Press.
- 1986 The Chimpanzees of Gombe: Patterns of Behavior. Cambridge, MA: Harvard University Press.
- 1990 Through a Window: My Thirty Years with the Chimpanzees at Gombe. Boston Houghton Mifflin Company.

Appendix 3

Dian Fossey Selected Publications:

- 1970 “Making Friends With Mountain Gorillas”, National Geographic. 137:48-68.
- 1971 “More Years With Mountain Gorillas”, National Geographic. 140:574-585.
- 1976 The Behavior of the Mountain Gorilla. Ph.D. Thesis, University of Cambridge.
- 1981 “The Imperiled Mountain Gorilla”, National Geographic. 159:501-523.
- 1983 Gorillas in the Mist. Boston: Houghton-Mifflin.
- 1986 “His Name was Digit”, International Primate Protection League Newsletter. 13(1):10-15.

Appendix 4

Thelma Rowell Selected Publications:

- 1966 “Forest-Living Baboons in Uganda”, Journal of Zoology. London. 149:344-364.
- 1967 “Variability in the Social Organization of Primates”, in Primate Ethology. Morris, Desmond, ed., London: Weidenfeld and Nicholson.
- 1972 Social Behaviour of Monkeys. Middlesex: Penguin Books.
- 1974 “The Concept of Dominance”, Behavioral Biology. 11:131-154.
- 1977 “Reproductive Cycles of the Talapoin Monkey (*Miopithecus talapoin*)”, Folia Primatologica. 28:188-202.
- 1984 Introduction: Mothers, Infants and Adolescents”, in Female Primates: Studies by Women Primatologists. Small, M ed. New York: Alan R. Liss, pp 73-91.
- 1988 “Monkey Business”, Natural History. 97(1):58-60.

Appendix 5

Barbara Smuts Selected Publications:

- 1982 Special Relationships between Adult Male and Female Olive Baboons (*Papio annubis*). Ph.D. Thesis, Stanford University.
- 1983 "Dynamics of Social Relationships between Adult Male and Female Olive Baboons: Selective Advantages", in Primate Social Relationships: An Integrated Approach. Hinde, R.A., ed. Pp.112-116. Oxford: Blackwell.
- 1983 "Sisterhood is Powerful: Aggression, Competition, and Cooperation in Nonhuman Primate Societies", Manuscript for D. Benton and P.F. Brian, eds. The Aggressive Female. Announced but not published, Montreal: Eden.
- 1983 "Special Relationships between Adult Male and Female Olive Baboons: Selective Advantages", in Primate Social Relationships: An Integrated Approach. Hinde, R.A., ed. Pp.262-266. Oxford: Blackwell.
- 1985 Sex and Friendship in Baboon. New York: Aldine.
- 1987 "Gender and Aggression, and Influence", in Primates Societies. Smuts, Barbara B. et al., eds., pp.400-12, Chicago: University of Chicago Press.
- 1987 "Sexual Competition and Mate Choice", in Primates Societies. Smuts, Barbara B. et al., eds., pp.385-399, Chicago: University of Chicago Press.
- 1992 "Male Aggression against Women: An Evolutionary Perspective", Human Nature. 3:1-44.

Appendix 6

Jane Lancaster Selected Publications:

and Richard Lee

- 1965 "The Annual Reproductive Cycle in Monkeys and Apes", in Primate Behavior: Field Studies of Monkeys and Apes. DeVore, Irven, ed., New York: Holt, Rinehart & Winston.
- 1972 "Play-Mothering: The Relations Between Juvenile Females and Young Infants Among Free-Ranging Vervet Monkeys", in Primate Socialization. Poirier, Frank, ed., New York: Random House.
- 1973 "In Praise of the Achieving Female Monkey", Psychology Today. 7(4):30-36,99.
- 1975 Primate Behavior and the Emergence of Human Culture. New York: Holt, Rinehart & Winston.
- 1979 "Sex and Gender in Evolutionary Perspective", in Human Sexuality: A Comparative and Developmental Approach. Katchadourian, H.A., ed., Los Angeles: University of California Press.
- 1984 "Introduction", in Female Primates: Studies by Women Primatologists. Small, Meredith, ed., New York: Allan Liss.

Appendix 7

Sarah Blaffer Hrdy Selected Publications:

- 1976 “Care and Exploitation of Nonhuman Primate Infants By Conspecifics Other than the Mother”, in Advances in the Study of Behavior. vol. 6. New York: Academic Press.
- 1977 Langurs of Abu. Cambridge, MA: Harvard.
- 1979 “The Evolution of Human Sexuality: The Latest Word and the Last. Review of Donald Symons, The Evolution of Human Sexuality”, The Quarterly Review of Biology. 54:309-314.
- 1981 The Woman that Never Evolved. Cambridge: Harvard University Press.
- and William Bennett
- 1981 “Lucy’s Husband: What Did He Stand for?” Harvard Magazine. (July-August):7-9,
- 1983 “Heat Lost”, Science. 83 (October): 73-78.
- and George C. Williams
- 1983 “Behavioral Biology and the Double Standard”, in Social Behavior of Female Vertebrates. Wasser, Samuel K., ed., New York: Academic Press.
- 1986 “Empathy, Polyandry, and the Myth of the Coy Female”, in Feminist Approaches to Science. Bleier, Ruth, ed., New York: Pergamon Press.

Appendix 8

Jeanne Altmann Selected Publications:

Source: <http://www2.uchicago.edu/bsd-ev-bio/altj.htm>

- Altmann, S.A. and Altmann, Jeanne
1970 Baboon Ecology: African Field Research. Chicago: University of Chicago Press.
- Altmann, J.
1974 "Observational study of behavior: sampling methods, Behaviour. 49:227-267.
- Altmann, J.
1979 "Age cohorts as paternal sibships", Behav. Ecol. Sociobiol. 6:161-164.
- Altmann, J.
1980 Baboon Mothers and Infants. Cambridge: Harvard University Press.
- Altmann, J., G. Hausfater, and S. Altmann
1988 "Determinants of Reproductive Success in Savannah Baboons", in Reproductive Success. ed. by T. Clutton-Brock. Chicago: University of Chicago Press, pp. 403-418.
- Altmann, J.
1990 "Primate males go where the females are", Anim. Behav. 39:193-194.
- Altmann, M., and J. Altmann
1991 "Models of status-correlated bias in offspring sex-ratio", Am. Nat. 137:542-555.
- Moses, L.E., L.C. Gale, and J. Altmann
1992 "Methods for analysis of unbalanced, longitudinal growth data", Am. J. Primatol. 28:49-59.
- Altmann, J., D. Schoeller, S. Altmann, P. Muruthi, and R. Sapolsky.
1993 "Body size and fatness of free-living baboons reflect food availability and activity levels", Am. J. Primatol. 30 :149-161.
- Alberts, S., and J. Altmann
1995 "Balancing costs and opportunities: dispersal in male baboons", Am. Nat. 145:279-306.
- Alberts, S. C., J. Altmann, and M. L. Wilson

- 1996 "Mate guarding imposes foraging constraints on male baboons", Anim. Behav. 51:1269-1277.
- Altmann, J., S. C. Alberts, S. A. Haines, J. Dubach, P. Muruthi, T. Coote, E. Geffen, D. J. Cheesman, R. S. Mututua, S. N. Siayalel, R. K. Wayne, R. C. Lacy, M. W. Bruford
1996 "Social structure predicts genetic structure in a wild primate group", Proc Nat Acad Sci 93:2597-
- Bronikowski, A. and J. Altmann
1996 "Foraging in a variable environment: weather patterns and the behavioral ecology of baboons", Behav Ecol Sociobiol. 39: 11-25.
- Altmann, J.
1997 "Mate choice and intrasexual reproductive competition: Contributions to reproduction that go beyond acquiring more mates", In: P. Gowaty, ed., Feminism and Evolutionary Biology: boundaries, intersections, and frontiers. New York: Chapman Hall, pp. 320-333.

Appendix 9

Biruté Galdikas Selected Publications:

- 1975 “Orangutans, Indonesia’s ‘People of the Forest’”, National Geographic. 148(4):444-473.
- 1979 Orangutan Adaptation at the Tanjung Puting Reserve. Ph.D. Thesis, University of California Los Angeles.
- 1979 “Orangutan Adaptation at the Tanjung Puting Reserve: Mating and Ecology”, in The Great Apes. Hamburg, David A. and Elizabeth R. McCown, eds., Menlo Park: Benjamin Cummings.
- 1980 “Living with Orangutans”, National Geographic. 157(6):830-853.
- 1981 “Variations in Subsistence Activities of Female and Male Pongids: New Perspectives on the Origins of Hominid Labor Division”, Current Anthropology. 22:241-55, with Geza Teleki.

Appendix 10

Shirley Strum Selected Publications:

- 1975 "Life with the Pumphouse Gang", National Geographic. May.
- 1976 Predatory Behavior of Olive Baboons (*Papio anubis*) at Gilgil, Kenya. Ph.D. Thesis, University of California Berkeley.
- 1977 "Dr. Strum: Presenting Baboons", in Westways. Shapiro, Arnold, ed., 69(3), March.
- 1978 "Dominance Hierarchy and Social Organization: Strong or Weak Inference?" Unpublished Manuscript for the Wenner Gren Conference on Baboon Field Research: Myths and Models.
- 1982 "Agonistic Dominance in male Baboons: An Alternative View", International Journal of Primatology. 3:175-202.
- 1983 "Use of Females by Male Olive Baboons", American Journal of Primatology. 5:93-109.
- 1983 "Why Males Use Infants", in Primate Paternalism. Taub, D.M., ed., New York: Van Nostrand.
- 1987 Almost Human: A Journey into the World of Baboons. New York: Random House.
- 1987 "The Pump House Gang Moves to a Strange New Land", National Geographic. 172(5):676-690.
- and William Mitchell
- 1987 "Baboon Models and Muddels", in The Evolution of Primate Behavior: Primate Models. Kinzey, Warren G., ed., Albany: State University of New York.

Appendix 11

Sue Savage-Rumbaugh Selected Publications:

and B.J. Wilkerson

1978 "Socio-Sexual Behavior in *Pan Paniscus* and *Pan Troglodytes*", Journal of Human Evolution. 7:327-344.

et al.

1978 "Symbolic Communication Between Two Chimpanzees (*Pan troglodytes*)", Science. 201:641-644.

1986 Ape Language from Conditioned Response to Symbol. London: Oxford University Press.

1994 Kanzi: The Ape at the Brink of the Human Mind. New York: John Wiley and Sons.

Appendix 12

Linda Marie Fedigan Publications:

Source: <http://gpu.srv.ualberta.ca/~lfedigan/fedigan.htm>

Books and Monographs:

- 1992 Fedigan, L.M. Primate Paradigms (Second Edition). University of Chicago Press.
- 1991 Fedigan, L.M. and Asquith, P.J. The Monkeys of Arashiyama: 35 Years of Research in Japan and the West. Suny Press.
Reviews of The Monkeys of Arashiyama appear in: AJPA 87:239-41; American Anthropologist 95:167-68; Ethology 93:258-64; Primates 33:148-150.
- 1982 Fedigan, L.M., Primate Paradigms: Sex Roles and Social Bonds. Montreal: Eden Press, 400 pp.
Reviews of Primate Paradigms appear in: Am. Anthr. 85:701-2; Am. J. Phys. Anthr. 61: 269-77; Am. J. Prim. 4:99-100; Anim. Behav. 31:2; IJP 12: 111-113; Man 18(3):607-8; Nature 302:359; Psych. Rep. 52:1011; Rev. in Anthr 11(2):79-87; Science 219:281; Z. fur Tierpsych. 66(3-4):356.
- 1976 Fedigan, L.M., A study of roles in the Arashiyama West troop of Japanese monkeys (Macaca fuscata). A Monograph in the Series: Contributions to Primatology, volume 9. Basel: S. Karger Publ., 99 pp.

Articles in Refereed Journals and Book Chapters:

- In Press Fedigan, L.M. and Zohar, S. Sex differences in mortality of Japanese macaques: 21 years of data from the Arashiyama West population. Am J Phys Anth.
- In Press Fedigan, L.M., Rose, L.M., and Avila, R. M. See how they grow: tracking capuchin monkey populations in a regenerating Costa Rican dry forest. In: Adaptive Radiations of Neotropical Primates, M. Norconk, A. Rosenberger and P. Garber (eds.) Plenum Publ.
- In Press Hall, C.L. and Fedigan, L.M. Spatial benefits afforded by high rank in white-faced capuchins. Animal Behaviour.
- In Press Gould, L., Fedigan, L.M. & Rose, L.M. Why be vigilant? The case of the alpha animal. Int. J. Primat.

- In Press Fedigan, L.M. Is primatology a feminist science? In: Women in Human Evolution, L.Hager (ed.) Routledge Press.
- In Press Strum, S.C. and Fedigan, L.M. Theory, method and gender: what changed our views of primate society? In: The New Physical Anthropology, S.C. Strum and D.G. Lindburg (eds.) Prentice Hall.
- 1997 Fedigan, L. M. Changing views of female life histories. In: The Evolving Female: A Life History Perspective, M.E. Morbeck, A. Galloway and A.L. Zilman (eds.) Princeton, N.J.: Princeton University Press, pp. 15-26.
- 1996 Fedigan, L.M. Foreword. In: Monkeys of the Mesquite. The Social Life of the South Texas Snow Monkey, M.S.M. Pavelka. Dubuque: Kendall/Hunt Publishing.(Second Printing)
- 1996 Fedigan, L.M. and Griffin, L. Determinants of reproductive seasonality in Japanese macaques. In: Evolutionary Behaviour of the Macaques, J.E. Fa and D.G. Lindburg (eds.) Cambridge: Cambridge University Press, pp. 368-87.
- 1995 Rose, L.M. and Fedigan, L.M. Vigilance in white-faced capuchins, Cebus capucinus, in Costa Rica. Animal Behaviour 49: 63-70.
- 1995 Fedigan, L.M. and L.M. Rose. Interbirth interval variation in three sympatric species of neotropical monkeys. American Journal of Primatology 37(1):9-24
- 1994 Fedigan, L.M. and Pavelka, M.S.M. The physical anthropology of menopause. In: Strength in Diversity: A Reader in Physical Anthropology. A. Herring and L. Chan (eds.). Canadian Scholars Press, Inc., pp.103-126.
- 1994 Fedigan, L.M. Science and the successful female: Why there are so many women primatologists. American Anthropologist. 96:10-20.
- 1993 Fedigan, L.M. Sex differences and intersexual relations in adult white-faced capuchins (Cebus capucinus) International Journal of Primatology, 14:1-25.
- 1993 Fedigan, L.M. The changing role of women in models of human evolution. In: The Human Evolution Sourcebook, R.L. Ciochon, J.G. Fleagle (eds.), Englewood Cliffs: Prentice Hall, pp. 243-259 (reprinted from 1986 paper).
- 1992 Fedigan, L.M. Neither a genre of feminism nor of ethical naturalism: primatology as a source of naturalistic truth and fallacy. Politics and the Life Sciences. 11:172-74.
- 1992 Fedigan, L.M. and Asquith, P.J. The history of Arashiyama research as a microcosm of larger trends in primatology. In: Topics in Primatology, Vol. 2, Behavior, Ecology and

- Conservation. N. Itoigawa, Y. Sugiyana, G.P. Sackett, and R.K.R. Thompson (eds). Tokyo: University of Tokyo Press, pp 67-77.
- 1992 Fedigan, L.M. Preface. In: Social Processes and Mental Abilities in Non-human Primates. F.D. Burton (ed) Lewiston: Edwin Mellen Press. pp III-IV.
- 1992 Fedigan, L.M. The role of women in models of human evolution. In: Inventing Women, G. Kirkup, L.S. Keller (eds), Cambridge U.K.: Polity Press, pp. 102-22 (reprinted from 1986 paper).
- 1991 Pavelka, M.S.M. and Fedigan, L.M., Menopause. A comparative life history perspective. Yearbook of Physical Anthropology. 34:13-38.
- 1991 Glander, K., Fedigan, L.M., Fedigan, L. and Chapman, C., Field methods for capture and measurement of three monkey species in Costa Rica. Folia primatol., 57:70-82.
- 1990 Fedigan, L.M., Vertebrate predation in Cebus capucinus: meat-eating in a neotropical monkey. Folia primatol. 54: 196–205.
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Appendix 13

Linda Marie Fedigan Student Thesis Supervision:

Source: <http://gpu.srv.ualberta.ca/~lfedigan/fedigan.htm>

In progress

- Goforth, C. "Age and sex differences in the use of progress manipulation during foraging in *Cebus capucinus*." M.A. Thesis.
- Jack, K. "Costs and benefits of male sociality in white-faced progress capuchins. PhD Dissertation
- O'Neill, A. "Ovarian hormones and behavior in free-ranging progress capuchins. MA thesis
- Sivertson, L. "A discourse analysis of controversy in science progress and social science: the reception of *Primate Visions* by Donna Haraway (1984)." MA Thesis (co-supervised).
- Sorensen, T. "Ecology of *Alouatta palliata*, *Ateles geoffroyi* progress and *Cebus capucinus* in a regenerating tropical dry forest." MA Thesis (co-supervised).
- Larose, F. "Foraging strategies, group size, and food 1996 competition in neighboring troops of howler monkeys, *Alouatta palliata*." Ph.D. Dissertation.
- 1996 Ellis, C. "Patterns of affiliative behavior in uterine groups of rhesus monkeys." Honour's Thesis.
- 1996 O'Neill, A. "Life after the lab: the viability of reintroduction for macaques," Honour's Thesis.
- 1995 Hall, C. "Dominance and foraging in white-faced capuchins". M.A. Thesis.
- 1995 MacKinnon, K. "Age differences in foraging patterns and spatial associations of the white-faced capuchin, (*Cebus capucinus*), in Costa Rica." M.A. Thesis.
- 1994 Goforth, C. "Primateology and the evolution of political behavior." Honour's Thesis.
- 1994 Kaufman, R. "The nature of agonism and dominance and their relationship to social grooming in the brown lemur, *Eulemur fulvus*." Ph.D. Dissertation.
- 1992 Rose, L. "Sex differences in foraging behavior and benefits and costs of resident males in white-faced capuchins - M.A. Thesis.
- 1991 Collinge, N. "The development of social cognition in four species of nonhuman primates." Ph.D. Dissertation.
- 1991 Pizzi, L.M. "The langur (*Presbytis entellus*) debate: an exploration of the controversy over the sexual selection versus social pathology perspective. Honour's Thesis.
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- M.A. Thesis.
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- 1985 Collinge, N. "Variability in weaning;related behaviors in mothers and infants in semi-free ranging Japanese macaques." M.A. Thesis.
- 1984 Bullard, J., "Mount;prompting behaviors of female Japanese macaques (*Macaca fuscata*). " M.A. Thesis.
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- 1983 McDonald, M., "The courtship behavior of female Japanese monkeys." M.A. Thesis.
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- 1979 Baxter, J., "Behavioral Patterns relating to age and sex in free-ranging spider monkeys in Tikal National Park, Guatemala." M.A. Thesis.
- 1979 Allan, B., "Sex differences in mother;infant interactions in a Japanese macaque troop", Honour's Thesis

IMAGE EVALUATION TEST TARGET (QA-3)

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